







NOVUM ORGANUM MEDICORUM;

A NEW

MEDICAL LOGIC.

LONDON :
PRINTED BY J. WYNESS,
4 Little Tower Street.

NOVUM ORGANUM MEDICORUM;

A NEW

MEDICAL LOGIC;

OR,

THE ART OF THINKING AND RIGHT REASONING
APPLIED TO PRACTICAL MEDICINE;

EXHIBITING

THE PRINCIPLES ADVANCED IN A LARGER WORK,
UNDER THE SAME TITLE,

BY

VINCENZO LANZA, M.D.

PROFESSOR OF CLINICAL MEDICINE IN THE OSPIDALE
DELLA PACE AT NAPLES.

TRANSLATED FROM THE ITALIAN

By C. STORMONT, M.D.

LONDON:

PRINTED FOR SAMUEL HIGHLEY, 174 FLEET STREET,
AND WEBB STREET, ST. THOMAS'S HOSPITAL.

1826.



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TRANSLATOR'S PREFACE.

IN introducing the principles of Professor Lanza's systematic work to the notice of the faculty in Great Britain, the translator may be allowed to state, that he is chiefly actuated by an earnest desire to promote the improvement of medical science. He is well aware that many evils have resulted, in the practice of medicine, from the minds of young and inexperienced men being captivated by theories, which their want of experience disqualified them from appreciating justly, as well as from the obstinate zeal with which erroneous doctrines, when once espoused, have been maintained and acted upon by older men, whom experience ought to have enlightened. He is likewise sensible of the distrust with which any theory, which pretends to give a general explanation of the doctrines of pathology, is likely to be received at the present time, when practical and pathological facts have become almost the exclusive objects of attention, especially since the era of the wild speculations of Brown, which were calculated to involve in ridicule every attempt at a systematic view of the science of medicine. He is even impressed with a belief, that the ingenuity of man never could have

devised a theory, which should satisfactorily explain all the phenomena of disease.

The pathological doctrines of Professor Lanza, however, the translator conceives to differ so essentially from all others heretofore proposed, and to consist of something so superior to any mere effort of human ingenuity, as to be well entitled to the attention of the profession in Great Britain, even in these enlightened times, when facts—not opinions, are in universal request. Although the author, with that modesty which is usually united with extraordinary merit, speaks of his theoretic views as a mere “hypothesis,” which he shews no anxiety whether his readers reject or adopt, the translator feels assured that they are founded in truth and nature, and that their value cannot fail to be universally admitted.

The author's system cannot be classed under the same head with any of the theories that have heretofore been suggested, whether the mechanical or chemical, the humoral pathology, the doctrine of spasm, or the far-famed Brownian system of debility and excitement. These severally set out with assuming, without proof, their respective general principles, from which they profess to deduce an explanation of the phenomena and essential characters of all diseases, and on this to found their respective practical dogmas; while the doctrine of Professor Lanza arises immediately from facts, is guided in every step by logical induction, carrying the force of mathematical demonstration, and admits no

general principle, but what results from the minute and analytic consideration of particular facts, at once undisputed and unquestionable. In a word, while other theoretic systems are constructed by synthesis, that of our author proceeds by the more tedious, but sure and satisfactory method of analysis.

With a mind of a kindred cast to that of the great Lord Bacon, Lanza was, from early life, a devoted admirer of the analytic system of philosophising; the superiority of which, as an engine for the successful investigation of truth, over the synthetic methods of dogmatising previously in use, is demonstrated in that admirable work, the title of which, "*Novum Organum*," is borrowed from his great prototype, by our author. As Bacon did into the sciences generally, Professor Lanza is ambitious of the honour of introducing, into medicine, the true system of philosophising, rather than to have himself considered the inventor or author of an ingenious theory.

His principles being strictly logical deductions from facts, the translator will be much mistaken if the reader of experience does not find, in their application to the phenomena of disease, many occasions on which they will enable him to reconcile apparent discrepancies in nature, and to give satisfactory explanations of the operation and effects of remedial means, which he has been in the habit of employing empirically, on account of their beneficial powers, without the light of any theoretical principle, if not in opposition to those commonly taught in the schools.

It may be proper here to explain, that it is not intended, in the present publication, to furnish a copy of the whole of Professor Lanza's work, but only of such portion of it as contains the explanation of his general principles, and shall at the same time serve to exemplify his method of reasoning, in the application of those principles to some of the most important pathological changes which occur in the human body. The translator conceives that he thus furnishes the British pathologist with a valuable engine for the promotion and improvement of pathological and therapeutical science, and at the same time a model or ground-work, upon which the experienced reader may establish practical doctrines, adapted to individual diseases, according to his own judgment, discretion, and experience. Some diseases, as intermittent and remittent fevers, for example, demand so large a share of attention from the physician in Italy, as to justify the length to which Professor Lanza has thought proper to extend his observations on them in the original, while, since these diseases are now comparatively rare in England, such a minute investigation of them might have been deemed tedious in the translation. This will account to the reader for allusions which occur now and then, in the course of this part of the work, to those parts which, in the original, relate to particular diseases or remedies, but are not included in this publication.

In the Italian there occur some terms which it was not easy to render the precise meaning of by

any English word in common use. For example, that disturbance of the tissues composing the substance of any part of the body, which results from a contusion or bruise, the author has termed "*disformamento*," a word that might perhaps have been rendered "*disformation*," but the translator has preferred, to this harsh word, a little circumlocution of words in common use, and, accordingly, terms the injury in question, a *derangement of the tissues*. The author employs the word "*scioglenti*" to signify those remedies which reduce the strength, or which tend, in conformity with the meaning of the latin verb *solvo*, to solve, loosen, or untie the hold, which a disease has of the body, or, in short, to promote the resolution of a disease: while the usage of the english language confers a very different meaning upon the kindred word *solvents*. With the exception, therefore, of a few instances in which the words *solvent* or *solvents* are adopted, the meaning has generally been attempted to be conveyed by the words *relaxant* or *relaxants*. This, however, is but an imperfect translation; for, among the "*scioglenti*," are included blisters, electricity, magnetism, as well as many of the narcotics, as *cicuta*, *hyosciamus*, *digitalis*, *lauro-cerasus*, *belladonna*, &c. while opium is classed with wine among the "*vivificanti*." The idea comprehended by the word "*scioglenti*" includes even astringents, such as iron, alum, &c. which are possessed of certain powers in promoting the resolution of disease, and even of increasing some of the excre-

tions, although their chemical or physical action is directly to constrict the fibres of those parts of the living body, to which they are applied, and hence our author sometimes employs the term constrictive as applied to a certain class of "scioglenti." In this sense the words "deobstruents" or "resolvents" might perhaps have suited the purpose of translation better than "relaxants," but, as the latter had been generally employed throughout the prior part of the translation, and in places where the former would not have answered, it was thought better still to employ it with this explanation, rather than to change it. This is merely mentioned as an apology for the imperfection of the translation, arising from the English language wanting words to convey exactly the ideas sometimes attached to particular words in the Italian, and to different ideas being expressed, in the two languages, by words derived from a common origin. With these few observations, the translator submits this little volume to the tribunal of public opinion.

THE
ART OF THINKING, &c.
Applied to Practical Medicine.

BOOK FIRST.

CHAPTER I.

OF EXPERIENCE, AND OF INDUCTION.

[SINDROME, *a term employed in some parts of this Work, means—concourse, multitude.*]

TO determine the nature of diseases, and the choice of remedies by which they may be cured, is a problem the solution of which forms the object of Practical Medicine, and of which, with the help of God, we proceed to treat. In this first Book we shall discuss the logical rules which it is necessary to observe, in order that the nature of diseases, and the choice of remedies, may be clearly discovered without danger of mistake.

The nature of diseases, and the mode of operation of remedies, are things not immediately subjected to the evidence of the senses, and can be seen

only by the mental eye ; for this reason, the Physician ought ever to combine experience and induction, and it is only by using them together that he can obtain the end of his art ; from which it appears, that the art of thinking rightly in Medicine, consists in knowing how to conjoin with sagacity reason and experience, in administering to the wants of the sick.

All the facts of practical medicine are reducible to five heads ; hence experience affords to the Physician five grounds only for his reasoning, and these are the following : first, the exact investigation of the external causes which have produced the disease ; secondly, the complete description of the phenomena of the disease itself, not less than of the idiosyncrasy of the patient ; thirdly, the impartial observation of the things usually recognized as agreeable or hurtful to the patient, especially those of the non-naturals ; fourthly, the result, happy or otherwise, of the cure ; fifthly, the analogy, rightly instituted, between the various species of the disease itself, and between diseases similar or opposed to each other.

The induction, again, which ought to be brought to meet these five grounds of practical facts, is of two species : the one we call clinical or practical, the other theoretical or hypothetical, induction. Clinical induction is simply common reasoning applied to the said facts, in order only to measure the relation between, and to draw the consequence flowing from their union. Hy-

pothetical induction is the reasoning springing from preconceived ideas of the essence of life, of health, and of disease, and afterwards applied to the case of some particular malady, in order to understand the nature of the same, and the intrinsic operation of remedies; these second reasons must necessarily be called hypothetical, since the science of medicine has no ideas of similar facts, otherwise than hypothetically.

It is exceedingly dangerous to make use of hypothetical induction in practice; but unhappily every one knows on the other hand, that we cannot always do less; that, when the facts alone, accompanied by the simple clinical induction, are not sufficient to enable us to give an opinion, necessity and not choice obliges us to have recourse thereto. For this reason, medicine must always be an hypothetical or fallacious art, until the time shall arrive, if indeed it ever will come, in which the idea in what life, health, and disease consists, shall be real, and no more hypothetical; but in the present day, although every contrivance is used in order that hypothesis may be the least possibly employed, yet we never can arrive at absolute certainty in any question in medicine; and we are accustomed to believe, and to announce to others for certain, that which is only, in the greatest degree, probable.

That in practice we may acquire the habit of keeping ourselves distant from error, into which hypothesis might lead us, it is necessary we

should keep our minds always intent on the observation of the two following maxims :

1. Every judgment which bears evidence proceeding from experience, accompanied with practical induction, with little or nothing hypothetical, may be held as highly probable, whence to pronounce less dubiously the prognostics, and to undertake with more energy the cure.

2. All other judgments, which are the most numerous, that bear evidence of being derived from obscure facts, attended with weak clinical induction, and for that reason sustained, in a great measure, by hypothetical reasoning, should be held as little probable ; whence the prognostics are to be pronounced very dubiously, and we are to withhold ourselves from all violent and dangerous methods of cure.

CHAPTER II.

HYPOTHESIS ABOUT THE NATURE OF DISEASES, AND
ON THE MODE OF THE OPERATION OF REMEDIES.

The Public justly censure those Physicians who transgress the foregoing maxims, who abuse hypothetical reasoning, by making use of it beyond what they ought, or who unwarrantably employ it against all practical induction, and such is done (what worse can be?) against facts themselves; such are denominated Physicians of system, of the chair, of the pen, not good practitioners, not clinical Physicians. To avoid this, we shall make use of hypothesis very sparingly, and only where it is necessarily required; moreover, it becomes us, rather than follow any theory of others, to expose, in this chapter, our own, holding it for established, that with respect to hypothesis, it matters not if others should think contrary to us.

THEORY OF DISEASES.

That incomprehensible thing, which produces the physical existence of bodies, is usually called *intrinsic force* of the same bodies; now, by the

term *vital force*, we intend to express no other thing than the abstract idea of that which exists within the living machine, and there, by its physical operation, makes it be such as it is while it lives ; if this force operates in a just measure, and in the manner it ought, there is health ; to wit, that kind of life in which the living delight to find themselves, because they can do precisely all the usual things for enjoying the living state. If then the vital force operates in an undue measure, or in a mode that it ought not, disease is produced ; to wit, that state of life in which the living being does not delight to be, because it suffers from the want of fulfilling its usual and required offices ; by which distinction, according to us, all diseases come to be divided, hypothetically, into two great classes ; that is, into those of grade, consisting in a simple change of degree ; and into those of mode, consisting in a change of manner, not less than of degree, in the vital force.

The diseases of grade present life obeying the same laws, and in the same manner which obtains in health, diverse only in degree, and which also are easily brought back to the state of health whenever the obstacles are removed, and there be added what is wanting, or removed what is exceeding ; from whence there is occasion to distinguish diseases of grade into hyperstenic, hypostenic, and irritative. Hyperstenic are the diseases which, in the schools of the present day, are called diseases of stimulus, and consist in an excitement greater than ordinary,

Ebriety, burning, exhaustion from over fatigue, are manifest examples of hyperstenia. Hypostenic diseases are those diseases which, in the schools of the present day, are called diseases of *contra-stimulus*, and consist in an excitement less than ordinary. Fasting, molestation from cold, exhaustion from sloth and from tiresomeness, are manifest examples of hypostenia. Irritative diseases are so called, from presenting, not so much a greater or less degree in the excitement, as perturbation in the same, and are produced by existing causes, not akin nor assimilable to life, and which do not cease to disorder, confound, and subvert every process of life, if they be not first removed from where they produce the irritation. A thorn which wounds a nervous filament, a caustic which consumes the skin, a tooth in the act of cleaving the gum, worms, indigestible substances in the stomach, the fœtus wedged in the passage, the retained placenta, the humours stagnating or out of their course, produce an irregular commotion in the excitement, which is called irritation, or irritative disease.

Diseases of grade are the least numerous of those treated by Physicians; they are also the slightest and least durable; nor are they even called diseases, but simply variations from, or disturbances of health. Those which are properly held, among the vulgar and by Physicians, for diseases, are those of mode, since, in these, life is observed to acquire new qualities, and they are observed to arise, run their course, and terminate according to laws in all respects pe-

cular to their nature ; and, lastly, it is observed, that whether excitants or debilitants be used, they do not lose their morbid qualities, unless by health or by death. Angina, pleurisy, ricketts, scrofula, the gout, small pox, petechiæ, schirrus, must be considered of morbid qualities, because each of these diseases, however found akin to another, yet is always of such quality that it can never be confounded with any other.

The diseases of mode cannot be classified with respect to degree, inasmuch as in one of the following chapters we shall demonstrate that they are all hyperstenic, by whatever cause produced : in such manner, that even when an hypostenic disease of grade, as fever changes into a disease of mode, as for example, into hepatitis, it becomes immediately hyperstenic ; and if an hypostenic disease of grade, or an irritative disease should change into one of mode, as, if drunkenness become phrenitis, or worms produce enteritis, it loses that grade which it had at first, and takes that new one which has respect to the new morbid qualities ; and however the hyperstenia of diseases of mode may vary, neither by this can they be classed ; on this account, that the degree as well as the quality of each one is always unchangeable and specific ; for instance, how much so ever alike may be, between themselves, measles and scarlatina, scrofula and rickets, petechial and miliary eruption, herpetic and milk eruptions, itch and syphilis, each one possesses a quality which specifically distinguishes it from others.

The classification, which we esteem necessary to practice in the diseases of mode, is that wherein they become divided into *diathestic* and *adiathestic*. The sense which we give to these words is different from that given them in the schools of the present day; diathesis signifies disposition, and from this we call diathestic those diseases which leave the body more disposed, and adiathestic those which render it least disposed, to suffer the same diseases another time; the angina tonsilaris, so easy to be renewed, comes to be called a diathestic disease, and the small pox, so rarely suffered twice, is styled an adiathestic malady.

Hypostenia, hyperstenia, irritation, diathestic modality, and adiathestic modality, are conditions which it is possible to find united in two, in three, or in four, in the same patient, only the two first can never be found together. To a patient, labouring under an endemic intermittent, may be added a petechial fever with worms, and he may find himself very weak and emaciated in person, from the duration of his malady. It is very easy to observe in such an one a physiological debility, or hypostenia in the state of his body, a quantity of irritative symptoms proper to vermination, the phenomena of the morbid petechial adiathestic modality, and those of the diathestic modality proper to the periodic endemic. These diseases are usually called complicated, and under this aspect almost all diseases, as we shall again see, either are or may be complicated.

THEORY OF REMEDIES.

We make four distinctions of remedies with respect to their mode of operation, naming them specifics, vivificants, solvents, and irritants.

Specifics.—We admit that in every agent there is a specific quality, or a particular mode of operation, whence the remedies (even the most analogous between themselves, as opium and wine) differ not less in degree than in mode, so that by increasing or diminishing, in whatever way, the dose of the one, we never come to produce precisely the effect which is proper to the other; but whether it be that they are rare or that we are not acquainted with them, very few indeed are the remedies which can be used as specifics, that is for that particular medicinal quality in them which directly corrects the morbid quality, and, on this account, the greatest part of remedies come to be used for their power of increasing or diminishing the impetus of the vital force, whence, if they do not remove the disease, yet they diminish its impetus.

Vivificants we call the agents which afford to life its pabulum, that exalt its phenomena and quicken its force; *Solvents* we again call those agents which impoverish life, which diminish the vividness of its phenomena and enfeeble its force. Now, since we have admitted as diseases of debility the hypostenic of grade only, it is in these only that

vivificants are of value, for, in every other case of disease, we believe that no other can be required than solvent remedies, saving only in certain cases of palliative or prophylactic cure, as we shall expose further in advance.

Irritants.—In order to understand now our ideas on the mode of operation of irritants, it is necessary to premise, that all agents, according to our hypothesis, can operate either ordinately or disordinately. The vital force, as every other natural force, has a *capacity* in receiving the influence of external things. Hence there is a point to the extent of which an agent operating succeeds regularly as a vivificant or as a solvent; but given in a dose, which exceeds the limits of the natural capacity, it disturbs, irritates, and disorders life: so that instead of being of benefit, it comes to produce a new disease of irritation, the which again, whatever may have been the nature of the agent, whether solvent or vivificant, may become either inflammation or congestion, or nervous, or of whatever other morbid form.

There are some agents which are always irritants, the which, because they are inimical to life, can never operate ordinately, but these are considered rather as causes of disease, and rarely come to be employed as remedies, because it is always endeavoured to avoid the cure of a disease by remedies which irritate the body of the sick. There are however other agents, and these, it may be well affirmed, are all others, both vivificant and solvent, the which, and beyond the just limits, do not fail

to become irritants, rather than minoratives of the disease.

The vital capacity to receive a remedy, or the measure beyond which an agent, whatever operating, may become irritant, comes to be determined, 1. From the constitution of the individual, and properly by the idiosyncrasy, age, sex, and habits of the same: for instance, to an abstemious person wine becomes an irritant and not here a vivificant; in like manner, so to some other is vinegar, or nitre, or antimony, &c. 2. From the specific quality of the disease, so that an agent which usually operates ordinately, becomes an irritant from some disease, or in some stage of the same: such is water in hydrophobia, and such may every other remedy turn out, although otherwise required by the nature of the disease, as is sometimes the bark to a sufferer from ague, &c. 3. From the nature itself of remedies, and in this it is a constant rule that the most efficacious remedies may turn out irritants more readily than the least efficacious.

From all this arises the great necessity of rules of practice, not only to know the indication which ought to be formed, but also to make the prescription of remedies wisely and moderately; in order that, beyond the rare case in which it is desirable to use irritants, we should procure always to operate ordinately, either with vivificants or with solvents: because of whatever nature a remedy may be, and how much it may be also indicated, when it comes to be given beyond measure and intemperatively, it

must needs prove irritant, exasperate the disease, or occasion new diseases, like as any other remedy counter-indicated would do.

CONCLUSION.

This is the theory of which we shall make use, when it shall be required. It does not certainly fall in with our intention to support it in this place with any demonstration, forasmuch as every hypothesis ought to be sustained by two reasons; the first, and most estimable, is that whereby it is shewn to be fit to attend practice, and such a demonstration shall be given by us in our progress, in the places where we employ it: the other is that wherein it is shewn to proceed from the most sound principles of philosophy, and this may be done by us, if time shall be accorded to write the elements of theoretic medicine. This only we wish to observe, that the principal point in which our theory differs from that most commonly received in the modern schools, stands in this, that we admit modality, or the particular qualities of diseases and of remedies. From Brown came the strange hypothetical principle, by which it is commonly imagined that life can suffer no other change except only in degree. We shall see how much damage from this has come to practice, and how, by admitting the principle of modality, in holding the modern language, we can avail ourselves of the sage ancients in practice. In the last

place we omit not to observe, that the difference of quality, which philosophy admits to be equally certain as that of quantity, in all the phenomena of nature, is also most evident in every thing pertaining to life. Nor in this could the vital force suffer an exception among the other natural forces.

CHAPTER III.

OF CLINICAL INDUCTION, APPLIED TO THE INVESTIGATION OF THE EXTERNAL CAUSES OF DISEASES.

Of the five sources of facts enumerated in the first chapter, by which to determine the nature of diseases, Brown would have a principal regard paid to the first, that is, to the nature of the causes operating. And, since the causes of almost every disease may be excitant or debilitant, so he comes to establish, that every disease may be of a double nature, that is hyperstenic or hypostenic. Further, since the pain suffered in every disease leads to debility, he comes to conclude, that hyperstenic disease, in process of time, becomes also spontaneously hypostenic. Hence, in the Brownonian school, to determine the nature of every disease, they are accustomed principally to regard the nature of the causes which may have produced it.

This principle seems at first sight so clear and easy, as to command the fullest confidence. But it cannot but press heavy on the mind of every one to remember, that a like method of determining the nature of diseases not only was not followed, but loudly condemned by all the ancient physicians, as such as must needs lead to continual and most dangerous mistakes. This is the root of the implacable enmity between the Brownonians and the physicians of all times : they do not less disagree in the consequences, than in the first logical principles of all practical reasoning.

The principal arguments by which physicians might have seen that the contemplation of external causes is not sufficient to determine the nature of diseases, are the following : 1. The knowledge of the causes, for the most part, does not depend on the observation of the physician, but comes from the information of the patient, and is often inexactly given, either because all the causes are not known to him, or because some are wished to be concealed. 2. The external causes of the greater number of diseases are not simple, but of opposite natures, either because they have operated together or alternately, so that it must depend, for the most part, on the will, or on the preconceived hypothesis of the physician, rather than on any fixed rule, to give advantage more to one than to another. 3. What is more, in the greatest number of diseases, the science of medicine is yet far distant from having determined precisely the causes and mode of operation of the same.

These reasons avail nothing in the minds of many, in order to keep them at a distance from becoming Brownonians: but well might the sad experience of the evils produced by the Brownonian practice; for those Brownonians themselves, who love the truth, made wise by past errors, not only have recognized for just the three arguments above, but have restored to clinical medicine the etiological maxims received for true in all periods of the science.

Here is the exposition of such maxim in the words of the modern school, but in its true and pure ancient sense: "With respect to their etiology, diseases require to be distinguished into those of a nature depending, and those independent of causes: the first preserve the same nature as the causes which have produced them; the second have always one and the same nature proper to themselves, whatever may be, or may have been, known or even unknown, their causes." After this maxim it follows, that those diseases, the which are observed to stand, always such as are or were their causes, ought to be reputed of the same nature as the causes themselves, and that with regard to those maladies, of which, although the occasions might have been various, the nature is observed to be always identical, by any other way, and never by their etiology, ought clinical induction to be employed to determine their nature. For instance, by whatever occasion, be it by heat or by cold, be it by anger or by fear, that an hepatitis is produced, since it is observed in all cases to be always the same, it is concluded at

the same time, both that hepatitis is a disease of a nature independent of the causes, and that clinical induction ought in other cases, and not in this, to seek to establish the nature of the disease by means of the causes.

Let it however be well observed, that if the knowledge of the occasions is necessary to determine the nature of those diseases that are thereon dependent; it is not perhaps less useful, and more so than any other in the diseases that are independent thereof, if not to determine their nature, certainly to understand their violence, pertinacity, and danger; and to this our good ancestors in the science made the etiology principally subservient in such diseases. The greater or less violence of the causes, their nature more or less noxious, the greater or less time in which they have operated, the slow and inobservable, or the rapid and manifest manner in which they have acted, enable us to conclude rightly on the nature, more or less afflicting, of the disease.

Now, it is necessary to employ clinical induction directed to the investigation of the external causes of diseases, in order to show the advantage of the hypothesis exposed in the last chapter.

It appears indeed just, that diseases, of a nature dependent on their causes, should be considered as simple alterations of degree, in more or in less, or in perturbation, according to such as are their causes, whether excitants, debilitants, or irritants. But there is good reason, that those diseases,

which acquire a nature always the same, and independent of their causes, should be considered, such as are the new qualities, or be it change of the mode in life.

CHAPTER IV.

OF CLINICAL INDUCTION, APPLIED TO THE CONSIDERATION OF THE PHENOMENA OF DISEASES, AND OF THE CONSTITUTION OF THE PATIENT.

The phenomenology of diseases offers things so much external to them, that they cannot, by themselves alone, afford practical induction sufficient to establish their nature. In fact, being obliged to make use of theory in order to understand the origin of phenomena, it is possible, by every hypothesis, to give them an arbitrary explanation; for which reason the physicians of all times, after considering the phenomena of the disease, as well as the causes, have thought it necessary to know the seat, the course, the violence, the danger, together with the nature of the same. Brown alone judged, that the knowledge of the causes, united to those of the symptoms of the disease, were sufficient to make known its nature. Nor did

he restrict himself to this first error, but wishing also to give a diagnosis, he fell into the following other most dangerous and pernicious error.

The phenomena which diseases manifest are of a duplicate nature. In the language of the modern schools, they are distinguished into those indicating the physiological, and those indicating the pathological state of the patient, whilst, with other language, the ancient schools and the vulgar distinguished them into those indicating the state of force and constitution of the patient, and those indicating the proper and particular state of the disease.

Now, with regard to the physiological state, it is constantly observable, 1. that rarely, and in the beginning of some diseases, there is an increased vigor, the which is indicated by the swelling of the vessels and tissues; by the abundance of blood and substance, and by the oppression of the forces. 2. That in the greater part of diseases, even from the beginning, there is a visible weakness by the fading of the colour, by the leanness, by the scarcity of blood, and by the languor of the forces. 3. That even in those diseases, which in the beginning appear with increased vigor, after a short time debility spontaneously shows itself, since the suffering from the disease is of itself an occasion both of the loss of substance and of force. 4. That this weakness is the more in subjects less robust, as in children, in women, in old men, in the inhabitants of cities, in invalids, and in those labouring under other chronic maladies.

This established, it is apparent what has been the error of Brown, and how it has been great, above any other committed by himself, or by any other physician ; for this reason, that he, from the first, confounded the physiological state of the patient with the pathological nature of the disease, and, hence, held himself in the belief that few diseases are hyperstenic, and that rarely are such produced ; that the most part of diseases, from the beginning, were hypostenic ; that hyperstenic diseases, in their course, also become hypostenic, and that the weaker constitution of the infirm must render the diseases of debility always the most numerous.

Not only the veteran physicians, but all, even to the vulgar, opposed themselves to the Brownonians, and reprov'd the brutish confusion, which they made of a distinction, not less visible to the medical eye than to the vulgar, between the physiological debility and vigor, and the pathological state, and oppression of the forces. Now, at length, so great an error has been corrected ; and from the correction of this, the difference hence arises of diseases of simple and duplicate phenomenology, after the which distinction, practical induction can justly establish the two following maxims.

1. The diseases of simple phenomenology are those which present no other sign than an alteration in the ordinary force, consisting either in excess or defect, or in perturbation of action. Further, it is to be observed, that these diseases are those, as has been stated in the last chapter, which

have a nature dependent on their causes. In fact, it is observed, that in those of excess, if that which exceeds be removed, in those of defect if that which is wanting be added, and in those of perturbation, if the irritating cause be removed, the forces quickly and spontaneously become regular, and the disease disappears.

In these cases practical induction, from the physiological phenomenology, that is, from observation of the state and progress of the body and of the forces, can easily judge of the nature of the disease.

2. The diseases of duplicate phenomenology present the symptoms proper to the disease in an aspect always the same, whatever may be the physiological state of the forces, or of the constitution of the patient; and, although the disease should vary with the variation of the forces of the patient, yet at bottom it ever and always preserves its own essential sameness. It is also to be observed, that these diseases are the self same, which in the antecedent chapter we have declared to be of a nature independent of their causes; and such, that as they depend not on their etiology, so neither do they depend on the state of the forces of the patient. In fact, in convalescence, when the disease has disappeared, there is then the greatest physiological debility. In these diseases practical induction can, from all other sources of facts, and not from the phenomenology, or from the causes, succeed in interpreting their nature; when the consideration of the age, sex, temperament, habits, accompanying diseases,

and of the forces of the patient, can be useful only to make known the violence and danger of the disease.

It will be useful to enlighten the above stated canons with some examples. What difference is there betwixt a case of simple burning and a fever, a case of small-pox and pleuritis? If in burning produced by fire, the caloric be removed by degrees, nothing more is necessary to be done, in order that the sufferer may be cured; but in pleurisy, however the forces may vary, and appear in vigour or in weakness, the concurrence of symptoms, properly pleuritic, is always of the same nature.

By this it appears clearly, that burning, the effects of cold, drunkenness, fasting, dentition, worms, are observed to hold their phenomenology simple; that is, to be in the same condition as are the physiological forces; and that pleurisy, rickets, the gout, &c. manifest themselves with duplicate phenomenology; that is, one set of signs regarding the physiological state of the patient, which is variable, and the other set comprising the phenomena proper to the disease which are constant, or always the same, let the forces be in vigour or weakness.

Now, in our judgment, the hypothesis before exposed, on the nature of diseases, after all that has been observed, appears always more just, inasmuch as every one sees that the diseases of simple phenomenology cannot be otherwise than of grade; but the diseases, the nature of which does not depend on that of their causes, and in which the pa-

thological phenomena are always the same, in whatever condition be the forces of the patient, by this show themselves clearly to be new conditions which the vital force has morbidly effected, or that they are new qualities or modalities of the same.

CHAPTER V.

OF CLINICAL INDUCTION, APPLIED TO THE DISCOVERY OF THE THINGS USEFUL OR HURTFUL TO THE COURSE OF THE DISEASE.

Our old Physicians and the most modern agree in one common logical principle, to wit, that the most secure search of facts, which, accompanied by practical induction, brings to light the true nature of the disease, is the exact discovery of the things useful and hurtful. This is the reason why the accord between the new and old practice becomes every day more strict, since the common logical principle cannot but conduct to a similarity, if not to a perfect uniformity of judgment. The reasons why there has always been given to such facts as these more credit than to others, are the following:—1. Because the things which operate under

the disease are better known, the more so that they are for the most part ordered by the Physician himself; and, 2. that their effects fall better under observation, and from this it can be better known what relation they bear with the nature of the malady.

In estimating the advantage or disadvantage of the things used under the disease, there is good reason why we should have regard to the course which the disease naturally follows, in order that we may be able to calculate the influence of these things relatively to its regular course; hence practical reason distinguishes diseases into those of non-necessary course and those of necessary course; from which distinction arise the three following practical canons.

1. The diseases dependent on their causes, and of simple physiological phenomenology (which, as has been said in the antecedent chapters, are considered hypothetically as simple changes of grade) have not any necessary course, but are in effect passive; that is, they diminish in like manner and by degrees as the natural force is increased, diminished, or balanced. Food to the famished, cold to the burned, the expulsion of worms, quickly relieve, and hence remove, the effects of famine, of burning, and of worms: whence, in these diseases, practical reason ought to regard only the effects produced on the physiological state of the patient, to conclude whether the things used are useful or hurtful. Further, seeing that a disease holds the

march of the physiological state, and that as by nature it depends on its causes, so, for its course, it depends on the things that are used, we have a secure argument for judging it to be of a non-necessary course.

2. The diseases of a nature independent of their causes, and of duplicate phenomenology, (which in the antecedent chapters we have said come by hypothetical induction, to be considered as diseases of mode) have a necessary course; that is, by adding or taking away from the physiological force, we come only to increase or diminish the violence of these; but whatever means may be used, they cease not to have their course, and to increase or diminish as their pathological nature requires. If fasting, burning, or worms, have produced an idiopathic essential gastritis, this, from the day it arises, must have a necessary increase or decrease, which the things used may mitigate somewhat, but not by force remove. And, because these diseases are independent of the physiological state of the person, it may well happen, that, although there be a physiological debility, yet means increasing the natural force prove hurtful, and those diminishing it prove beneficial.

3. Practical reason not being able to judge in these last diseases of the utility or hurtfulness of the things used, but relatively to the necessary course and naturally required run of the malady, it becomes it to endeavour to discover a rule whereby to measure the relations, advantageous or disadvanta-

geous, between the effects of the agents and those of the disease. This rule was given by Hippocrates—it was rejected unadvisedly by Brown, and was recalled to use among the Moderns by Rasori; the which afterwards unjustly wrote against the Hippocratic spirit,—*il genio Hippocratis*.

The rule of which we speak is, that in diseases of necessary course, in order that the utility or hurtfulness of the things employed may appear, it is necessary to fix the attention on two facts, that is, on the *physiological tolerance* which the machine appears to have for these things, and to the *alleviation of symptoms* produced by the same. We call *physiological tolerance of debilitants*, that easy sufferance of the use of such means, or of solvents, without the patient becoming, by the use of them, so much debilitated as might be expected from them if they had been used in health; and besides this, an intolerance of excitants, so that these do not produce also so much physiological vigour, as they would have done in a state of health. So, on the contrary, is known and called the *physiological tolerance of excitants*. We call *pathological alleviation of symptoms*, the diminution of the weight of the proper morbid phenomena, either absolutely considered, or relatively to the extent these might have been obliged to increase, if the disease were increasing; the which diminution is considered advantageous, although it be obtained with a greater decrease of the physiological force. This canon has need to be made more clear by an example, the

which may be well taken from the fever commonly called Typhus, which, by the Brownonians, is considered as a grave disease of debility; we may also suppose it to have had a course of many days, so that there appears to be in the patient a physiological debility. Now, the following observations are made:—1. The patient lies in bed naked, and immersed in the vapour of his body, secluded from great access of air, fasting, or on light and fluid aliment; such a regimen comes to be borne, and the contrary to this would be intolerable. 2. This debilitating regimen, blood-letting, and solvent remedies, are required. The disease itself produces, it is true, a physiological debility, but yet less than that which would have place in an individual in health exposed to the same means. 3. If the patient, clothed, should expose himself to the contact of the air, should move about, should eat and drink, he would not derive so much physiological force from these means as we should be led to expect. 4. By the debilitating means, it is true that the physiological debility is increased; but the heat, febrile aridity, and redness are diminished, as well as the density of urine, delirium, coma, convulsions; or, at least, if these symptoms are not diminished, for certain they increase more slowly: 5. All the excitants in the world cannot prevent that the malady itself shall not produce the physiological debility; they only cause this to be less; but, while they prevent so much debility, they increase the febrile heat, aridity, the load on the tongue,

the density of the urine, the delirium, coma, convulsions, &c. After these observations of fact, practical reason, or be it common sense, concludes, contrary to the hypothetical reason of Brown, and of all the Brownonians on the earth, that the typhus fever is an hyperstenic disease, and that it is necessary to treat it with solvents.

Practical reason, by this rule, renders itself superior to, and the comptroller of every hypothesis, and can easily decide whether the disease requires exciting or debilitating means, although no hypothetical induction should be employed. If we would, however, employ the greatest nicety that is possible, by which to judge of what is useful and what is hurtful, let us not draw our conclusion so much from the use of medicines or other things, of an obscure and dubious action, but rather from the things usual for the support of life, in order that we may more easily see if they prove useful or hurtful, increase or diminish the forces.

Now, the occasion presents of being able to profit by another argument of fact, in order still more to establish the hypothesis exposed in the second chapter. The diseases of non-necessary course, but dependant on means which regulate the vital force, ought to be esteemed, as may be understood by slight reflection, to be of grade; but those diseases which have a necessary course, and which can receive alleviation, even by means which increase the debility of the natural force, must be considered of mode, as new lives, or new conditions of life; in fact, they are cured by those means which never fail to produce outrage in the ordinary state of life.

CHAPTER VI.

OF CLINICAL INDUCTION APPLIED TO THE EVENT
OF THE CURE.

The result of the cure is the experiment to which the Physician can, with most difficulty, apply practical induction rightly, as it is that which compromises his self-love, and hurts the spirit of practice, rendering it either pusillanimous by the remembrance of the unhappy results, or audacious by the view of events too favourable in the cure.

With respect to their termination, diseases must be distinguished into those of a termination necessarily dependant on the things, useful or hurtful, which are employed; and into those of a termination not necessarily dependent on the means used. The diseases which by hypothesis are diseases of grade, and which in fact are of a nature dependant on their causes, of simple physiological phenomenology, and of a non-necessary course, are also those which necessarily depend on the things employed: because, that if, in those of excess, they regularly diminish, if, in those of defect, they increase, and in those of perturbation, they equilibrate the forces, the disease ought to finish necessarily and happily; and, if the contrary to all this should be done, the disease must always increase and become worse till death. The diseases

again which we call hypothetically of mode, and which are, in fact, of a nature not dependant on their causes, of duplicate phenomenology, and of a necessary course, have a termination not necessarily dependent on the things employed ; because, treated by a method the most properly instituted, they do not fail in some cases to terminate in death, and, treated by a method the most improper, yet a certain number will effect a cure. For example,—of one hundred ill of typhus, treated by an excitant method, there shall die twenty, but yet eighty are cured ; and, treated by a solvent method, ninety shall be cured, but yet ten die. Further, it might well happen, that, taking an example of two particular cases, and not now of many together, the debilitating method in the one case shall terminate in death, and the excitant in the other shall issue in the cure ; by this the quacks profit, by this the vulgar are often deceived.

To diseases of mode should be applied the sentence which Hippocrates has left written *experientia fallax*, and his subjoining *occasio præceps* explains the reason thereof ; inasmuch, as the only way to correct a practical error, is to renew the labour on the same subject, and under the same circumstances, and this is unhappily impossible, and only in our art ; for which reason, in diseases of necessary course, it should be held for certain, that a method of cure which has been easily borne, and which has caused alleviation, has always been useful, although the disease may have gone to an un-

happy termination ; and, on the contrary, that that regimen used in any disease, which has proved distressing and oppressive to the patient, ought to be held for bad, although health may have returned under it.

Anciently it was admitted, nor can any observant Physician deny, that there is *una natura medicatrice* (a *vis medicatrix naturæ*). These terms express the abstract idea of that which ought to exist in the vital force, by which comes the fact; certain and most frequent, that, in diseases of necessary course, although a solicitous but inexperienced hand increase them some degrees, yet some of them terminate, although with difficulty, in health ; and howsoever another hand withdraws from them some more degrees, as may be done by our art, yet there are some, although rarely, that go to a fatal issue. We shall allow to stand on one side the research after those laws of the vital force, whence it becomes what we see it, as a natural healer of diseases of necessary course, because this is an object of theoretical, not of practical, medicine : it is necessary for the present to regard these laws as simple facts, remitting the design of interpreting them to the time, when we shall write on theoretic medicine. Then we shall expose the principles of the cosmological not less than of the physiological laws.

Brown, consequently to his first error, by which he subjected life to degrees only, denied the *vis medicatrix naturæ*, and held all diseases to be passive, as he considered them all to be of grade ; but would

ever the Brownonians have been able to have any success if the natural healer (*the vis medicatrix naturæ*) had not conceded them many cures?

Now, can those diseases, which the addition or subtraction of degrees does not turn from their proper termination, ever be held for diseases of grade? Either must the natural healing power be denied, or those diseases, in which fact makes it appear, ought to be considered as new qualities of the vital force.

For the reasons above stated, in diseases of mode, we cannot judge otherwise of the nature of diseases from the result of the cure, than trying the same method in more and more cases of the same disease, and not by any particular cure. From this comes the usefulness which clinical establishments in a great degree afford to the progress of the art, where, since the days of our ancestors downwards, we descend to encounter the woeful arms which death uses against us.

CHAPTER VII.

OF CLINICAL INDUCTION APPLIED TO MEDICAL ANALOGY.

Analogy, although it be a most unfaithful argument, yet sometimes is the best that medicine is in condition to make use of, when the facts are

obscure or defective, drawn from the other four sources formerly exposed: for this there is need that practical induction should well determine the use of this argument, in order that some, as does Brown, may not use it against facts, and in service of hypothesis; knowing too well, that the junction of analogy and hypothesis brings forth illusions, and not reasonings, from the intellect.

In the diseases which, hypothetically, we call of grade, because they are of simple phenomenology, as we observed in the fourth chapter, there exists not any the least point of discord, between the use which we make of the argument of analogy and that which Brown makes of it, because it is easy to observe in these diseases,—1. that the hyperstenic are by their phenomena, all analagous between themselves, and opposed to the hypostenic: 2. that the hypostenic are also in their phenomena analogous, and opposed to the hyperstenic: and 3. that the diseases of irritation are diverse from the hyperstenic and hypostenic, not otherwise than between themselves, so much as are innumerable the causes and the situation of the irritation.

The discordance between our method of employing analogy and that held by Brown, lies in the diseases which, hypothetically, we call of mode, and which we have, in the fourth chapter, shown to have a duplicate phenomenology: and, in truth, it was a thing very ill done in Brown, who, by having also considered these diseases as of grade, without observing it came to fall into the unhappy

consequence of determining their nature, employed analogy with regard to the common physiological phenomena, and not with regard to the particular pathological phenomena of the same. For example, let there present a case of pleurisy ; in the first place there are the phenomena of increased vigour ; in its course it may be observed that such excess is passing into defect, and, further advanced, or even from the first, it might happen, that there should be a great physiological debility. Brown, seeing that the phenomena either of vigour or debility, in such disease, are analogous to the usual hyperstenic and hypostenic phenomena, concludes against the sentiments of all Physicians, that pleurisy might be hyperstenic and hypostenic, and that though produced hyperstenic, yet it might have changed itself, or been changed, into hypostenic.

From such a barbarous conclusion, we cannot but appeal to common sense, which, applied at the bed-side of the patient, is called clinical induction. Let the pathological phenomena of pleurisy be observed ; the pain, the difficult lying down, the oppression, the cough, the spitting, the dryness, the heat, the fever, how much they may have varied with the varying of the strength, offer altogether a most visible sameness in all the species in every stage of the disease. After this fact, practical induction does not hesitate to admit, that pleurisy is an identical incommutable disease by its pathological nature, however the physiological forces of the patient may stand, and however they may vary in the course of the disease.

From this induction comes the precept, which under different terms, the Physicians of all times have used, to wit, that, in diseases of mode, since the phenomenology is duplicate, a duplicate analogy must be held, one, of such a nature as is used in diseases of grade, by which to determine the physiological state of the forces of the patient ; and another, which compares the pathological part of a disease, with that of other diseases similar or diverse, by which to determine the points of sameness, and the points of difference.

And can it be possible not to see the phenomena to be duplicate in these last diseases ? And can it be possible not to perceive the pathological part, always identical, to be diverse from the physiological part, always variable ?

And what mind shall not judge the pathological part in these diseases, to be a change of mode, or a new quality of life ?

CHAPTER VIII.

OF CLINICAL INDUCTION APPLIED TO THE DISTINCTION OF MORBID STATES AND PROCESSES.

Every disease changes, more or less visibly, the sense, motion, and texture of a part, or of the whole of the machine ; and, with this, manifests physical,

chemical, and mechanical properties, new and particular. Now, an alteration so made, that it holds the nature itself of the causes, which offers the same phenomena as health, and is distinguished by this alone of being in more or less, or in disorder, which has not a necessary course, which finishes as soon as the causes have ceased to operate, or that the proper remedies are applied, is termed *morbid state*. When, however, the change of the processes of life is so ordained, that it acquires a nature proper and always alike, whatever might have been the causes which have produced it, which, besides the physiological phenomena, offers pathological signs altogether proper to itself and unknown in health, which has a necessary course and continues against whatever means can be used by man to put a sudden stop to it, is called *morbid process*, to express, that it consists in a series of newly ordained events, the which conceals within itself the cause of its nature, of its origin, and of its course. Of these two, here is the example:—let three fingers of the same hand be treated differently: place the index in ice, the middle finger in boiling water, and the ring finger on nettles, withdrawing them after a few moments, the excitement shall be seen less in the first, greater in the second, and irritated in the last finger. These changes are called morbid states, provided always that on withdrawing the fingers from the contact of the causes, and treating them properly, their morbid state shall immediately begin to decrease, and in a short time shall be found to have ceased, and the

fingers be seen to be as in health. But if, be it from the bad disposition of the fingers, or from the strong or the long operation of the causes, or be it from other circumstances not known; there arises in all the three fingers a true inflammation; this shall be termed an *inflammatory process*, because produced and hidden within itself is the cause of its mode of being identity, and the ordering of its phenomena in the manner that has been observed to be proper to diseases of mode, whilst those affections, to wit, the burning of the middle finger, by means of the boiling water, and the irritation of the ring finger by the nettles, which have also the appearance of inflammation, are simply called *states of inflammation*, because they preserve the characters of diseases of grade; for which reason the observing, that a disease holds its proper phenomena arranged in process, is always for us a sure indication that it may, or has already, become a disease of mode.

We make two species of the morbid processes, we call it *resolvable*, or *process of simple alteration*, when life changing the qualities preserves the elements of the ancient or sane texture, as in inflammation, obstruction, &c. and for this, that if they have fit remedies, or cure spontaneously, the process may be resolved, and life return as it was: we call *unresolvable* or *process of degeneration*, when life, under new qualities, produces parasite growths, and of new texture, the which are easily understood to be unresolvable, as the true *schirrus*, *lipoma*, *sarcoma*, &c. because there is not in them a power to be reduced.

The consideration of morbid processes gives to us an argument, powerful above all others, for concluding that diseases of process are truly modal. And in truth how should we not esteem as new qualities of life, those diseases, the which change visibly the organic texture, and the disposition of the vital force to feel, for the time to come, the same causes.

CHAPTER IX.

OF HYPOTHETICAL INDUCTION EMPLOYED TO EXPLAIN THE IDENTITY, HYPERSTENICAL, OF ALL MORBID PROCESSES.

Thus far in the foregoing chapters is demonstrated how the excitement in diseases of process suffers a change from that which it was in health, in a manner not solely in degree : now this principle will rest still more demonstrated by considering what value art may have in curing these diseases, because that in very few of these diseases do we possess specific means, such as by changing the morbid mode into health, we shall gain directly health, as would be sulphur for scabia, or mercury for syphilis ; but in the greatest part of these dis-

eases, the art wanting specific means by which to correct the mode, has no other power but that of diminishing the degrees, in such manner, that, reducing them sometimes to the lowest, resolution may be brought about. From this it appears what a necessary thing it is to study how, and in what degree, whether increased or diminished, the excitement exists in morbid processes, in order that we may be able to determine whether the palliative cure of the diseases in question should be stimulant or reductive.

The great improvement which modern schools have made in the hypothetical practice of Brown, consists precisely in having discovered and determined that morbid processes are all constantly hyperstenic, that is to say, that diseases of mode, whatever difference may exist between them and the state of health, nevertheless agree amongst themselves in having the excitement elevated in degree, which is called *the hyperstenic sameness or identity* of the diseases of progression. We shall find the ancients agreeing in this, although they may have drawn the conclusion from some other theory; or rather it may well be affirmed, that the logical method adopted by them, for determining the nature of such diseases, was precisely the same as ours; so that it is only in hypothesis and in language, that the Italian school of the present day differs from the pure Greek *Hippocratic* school, which is not impaired by the degradation of the science in later times.

Practical demonstration of the hyperstenic sameness of morbid processes can only be given from observation ; wherefore let the reader wait till, in the following books, the hyperstenic, nature of each disease of progression is demonstrated, treating of them one by one, and he shall see their identity proved, at the conclusion of such analysis. It is the design of the present chapter, taking this fact for granted, to apply to it the hypothetical induction, in order to give it a satisfactory explanation.

The curiosity of philosophers is no idle dream ; but arises from the absolute necessity which the mind feels to be satisfied by an explanation about the phenomena of whatever it observes ; and in truth, knowing too well how fallacious experience is, facts do not take possession of our entire faith, except when reason persuades us to it, by shewing that they ought to proceed exactly as they appear.

This explanation is yet wanting to the modern Italian school, so that it is, in the present day, more advanced in the practice, than in the theory of morbid processes ; it recognizes as fact, that in the lungs of a phthisical person there is an hyperstenic morbid process, throughout the whole continuance of the disease ; but it cannot explain how, in such a constitution, and in such physiological debility as prevails in such a patient, there ceases not to burn in his breast, even in the last stage, an hyperstenic morbid process.

Hypotheses never are more brilliantly demonstrated, nor so useful to a science, as when

we acquire by their aid the clear reason of a cardinal fact ; and still more when this same fact must remain obscure and entirely unintelligible by any other known hypothesis. In truth, the fact of the hyperstenic identity of morbid processes, must remain obscure and unintelligible, whilst the hypothesis is admitted, whereby all diseases are considered as of grade ; because, either the evident physiological debility of a phthisical person in the last stage must be denied, or it must be denied that the morbid process of phthisis is always hyperstenic, or at all events we renounce the wish to understand how hyperstenia and hypostenia can ever co-exist within one body, which is already supposed incapable of suffering any change, except in degree.

The hypothesis advanced by us, besides being solidly sustained by practical induction applied to the facts explained in the foregoing chapters, has the advantage of affording a happy and clear explanation of the most remarkable practical fact, that of the hyperstenic identity of morbid processes : because a machine, which is supposed capable of changing the mode not less than the degree of life, when it has morbidly suffered some modal change, necessarily comes to sustain, when the morbid process is established, a new life, a new mode of being, and to manifest its peculiar phenomena, and even a new texture ; for which reason it is easy to understand, that these morbid vital processes come to be always supplemental, (or ano-

ther life superadded) to the ordinary life. This is the more evident, if respect be had to the physiological feebleness of the patient, whence, the art, in defect of specific means, and being obliged to undertake the simple minorative cure, that is to reduce the degree of any morbid process, properly has recourse to reductive remedies, as those, which withdrawing the support of life, are also hostile to the growth of every morbid vital process.

We may take the opportunity, as an appendix to this chapter, to remove a difficulty which some minds, either too prejudiced, or unusually dull of comprehension, have suggested, namely. that the changes alledged by us to take place in the *mode* of the vital force, whether it be called *modality*, or difference in the *quality* of life, are things, which the intellect does not know how to comprehend, or imagine in what they consist. We answer briefly by asking, what is the thing relating to the intrinsic force of bodies productive of natural phenomena, whether of living or not living things, which we can comprehend or imagine? Is it not equally impossible to understand in what consists the change of degree of any force? When a weight falls from above, and we see it accelerate its motion in proportion to the degrees of its descent, can we understand what increases the force which urges it downwards? but though we cannot understand, we can express the abstract idea of this phenomenon, by saying, that the gravity of the body which falls increases every instant in degree.

Natural philosophy, as it calls the abstract idea of that which produces phenomena *force*, so it denominates the abstract idea of the visible variation of the phenomena themselves, a change of force ; and, therefore, what is observed in those phenomena which vary only in quality is termed, abstractly, a change of the degree of the force : and we also term abstractly a change of quality, what is observed in those phenomena, we perceive do not follow the simple laws of degrees ; but, also, some others peculiar to their specific variations. Sound, light, odour, we observe to differ manifestly both in degree and manner ; so, when we speak of diseases of mode, we do not intend to be able to understand in what manner the vital force by itself changes qualities ; but we have expressed nothing else than the abstract idea of the phenomena presented to us, to wit, that diseases which have a nature independent of that of the causes—a double phenomenology—a necessary course—a termination not necessarily determined—an invariable pathological analogy—a growth of new texture, and a power to change the dispositions of the machine to their own nature,——shew, as we have argued in the foregoing Chapters, that they do not differ from health only in degree ; but that they have a specific nature, and are of qualities distinct from each other and from health itself. We hope, especially that the followers of the modern pathology will not wish to deny the theory of modality, reflecting that in

saying that morbid processes are independent, immutable, specific, and always hypersthenic, is the same in substance as to announce in abstract terms, that, in them, the vital force must have assumed a new mode or quality.

CHAPTER X.

OF THE CURE OF DISEASES IN GENERAL.

When by the means that are used we intend that the disease shall be destroyed, the cure is said to be *radical*. When we propose only to alleviate or to suspend for some time the more urgent greater symptoms of the disease, we say it is *palliative*, and when, before the approach of the disease, or in its absence, we use means to avert it, or to prevent its paroxysm from returning, we call the cure prophylactic.

Now, about the cure of diseases, medicine in ancient times had two most necessary practical maxims, by the neglect of which not a little harm has come to therapeutics, so that we cannot but recall them to observance.

1. The radical cure must be distinguished into specific or modal, and minorative or gradal; the *specific* cure is that by which we directly cut short the disease by the means of some agent, which changes the morbid mode to health; the *minorative* cure is that by the which, wanting as we often do specific means, we employ stimulants if the morbid excitement be below the healthy standard, or reductive remedies if the morbid excitement be in excess, in order that the degree of the disease may be lessened as much as possible, and that the morbid quality may gradually, spontaneously, and naturally disappear, if possible, and so health return. 2. The palliative and prophylactic cures are distinguished into those which are analogous and those which are contrary to the radical. The analagous to the radical, whilst they alleviate or prevent the disease, are also useful to diminish it in degree; those again which are contrary to the radical cure, whilst they mitigate or suspend some phenomena of a disease tend to increase it in degree.

The minds of men of the present day are so prejudiced against these maxims, because they do not conform to the ideas commonly entertained of life, which is supposed to be capable of change only in degree, that it is required of the reader to use all courtesy, in keeping up his attention, and not allowing himself to be come indisposed to the consideration of those facts, which we shall most clearly demonstrate and explain in the following chapters; it being understood that those, shall become con-

vinced, ought to make use of taking the last irrefragable argument, by which we have shewn that life is capable of a difference of mode, not less than of degree.

CHAPTER XI.

OF CLINICAL INDUCTION APPLIED PARTICULARLY TO THE SPECIFIC CURE OF DISEASES.

The specific cure is varied according as the nature of the diseases vary, against which it is employed.

In diseases of grade, simply hyperstenic or hypostenic, in order that a specific cure may be accomplished, it becomes necessary to remove that agent which is in excess, or to add that which is wanting. It was a fine saying of Brown, that a man sunk from fasting could, by the joy derived from music, or the sight of a fine woman, exert and raise himself: the fact is, that in music, love, and any other exciting passion, consists the minorative cure of hunger, diminishing its effects, and lengthening life, but food alone can produce a specific cure, so that if this be withheld, nothing in the

world will prevent death. Now, the necessity of specific agents to the cure of the diseases, even of grade; shews most evidently that, although they differ from health only in degree, yet are really different in mode from one another.

In irritative diseases, it is certain that they are not removed by excitants or debilitants, unless the irritant cause be taken away; except indeed those cases in which such cause, although present, has from long habit ceased to be troublesome. Any other agent may calm somewhat the irritation, diminish the uneasiness, keep off the sad effects of the disease more or less, but cannot produce a specific cure. 3. In diseases of mode a specific cure is produced by those agents, which possess power either to neutralize and dispel the morbid cause present in adiathestic diseases, or to change the bad condition of the vital power in diathestic maladies, rendering it such as is proper to health.

Problem. Supposing that we have observed in what manner an agent succeeds in curing a disease, especially a disease of mode, it is required to be determined whether that agent ought to be esteemed a specific.

It is commonly believed, that the solution of such a problem depends on repeating many times the same experiment, and that when a happy event is observed in many cases, it ought to be concluded that the remedy tried operates as a specific; thus arises the multitude of specifics in medicine and among the vulgar: but, as this principle is false, so

also is it false that those remedies are specifics, which, by this manner of proceeding, have acquired such fame.

A remedy to be entitled a specific for any disease, especially a disease of mode or of necessary course, it must afford the following proofs: 1. That administered in proper dose, at a proper time and opportunity, it cures the whole disease certainly and without fail. 2. That without any delay it arrests the course of the disease ; so that if given during the increase the disease ceases to advance in the manner, which by its nature it would have followed, even to its height, but begins to decrease from the moment that the remedy begins to operate upon the body. 3. That the disappearance of the disease take place in such a manner, as to correspond in all its various circumstances to the time, the dose, and the manner in which the medicine has been administered. 4. Lastly, that no symptom or effect of the disease be increased, or not diminished, by the remedy.

A modern observer made experiments, to discover whether calomel were a specific against the petechial fever: it is sufficient to read the first observation of this person (from which it is evident that the disease ran its natural course, notwithstanding the calomel) to understand that this did not turn out a specific ; besides which, by reading the subsequent cases, it is proved that in petechial fever, treated with calomel, less advantages are perhaps obtained than were observed in the petechial epidemic of 1817, in those patients whom we cured

in the Ospedale della Pace, without giving them medicine; on the contrary, a single case would be sufficient, in which a remedy used for any disease should give the four proofs above mentioned, as sulphur does the itch, from which we are entitled to conclude that it acts specifically.

CHAPTER XII.

OF CLINICAL INDUCTION APPLIED PARTICULARLY TO THE MINORATIVE, OR GRADAL CURE OF DISEASES.

In the want of a specific cure, which is often wanting, nothing more is left to art than to employ the gradal or minorative cure of the disease, which also it is necessary to regulate according to the variety of diseases.

1. In hyperstenic or hypostenic diseases, if we cannot immediately remove the specific cause or apply the specific agent, we take away or add some other, and chiefly that which shall appear capable of diminishing or increasing the excitement in the manner most suitable to keep off the evil effects of hypersthenia and of hypostenia; thus we shall bleed

a man labouring under intoxication, if we fear apoplexy, as an effect from drunkenness; if it were possible to draw the wine from the body, or to neutralize it, we should effect a specific cure of drunkenness; but bleeding is evidently nothing more than the minorative cure of the effects.

In this mode of cure, the greatest delicacy is required, that the change suddenly made from one state to the opposite, may not produce a morbid process, in place of moderating or eradicating the disease: in like manner, as the great and rapid application of cold is injurious in the case of a burn, so the too solicitous and strong application of any counter-agent whatever, simply minorative, must in every case be equally and more hurtful.

2. In irritative diseases it is easily understood that, by raising or lowering the excitement, it is certainly not possible to restore order in a machine, which is disturbed by an irritant cause still acting. Art can only alleviate the pains, and prevent the evil consequences of such diseases, as all the possible morbid processes, inflammation, neuroses, &c.; which, once established, do not cease, although the irritating cause should be taken away; for which reason irritative diseases do not admit of a minorative cure in kind, but either the direct specific, viz. removing the cause, or the palliative, to alleviate the symptoms, or the prophylactic to prevent the processes which may succeed, in order that these may either be more mild, or less protracted, and that there may be time afforded for the cause to pass naturally away, or to be removed by art.

Diseases of mode, or morbid processes, of whatever form, by whatever occasioned, proceeding from an antecedent disease of grade, and already established, are all hyperstenic, as we observed, and ought to be practically demonstrated in the course of these elements, and of which we now reason hypothetically. From whence the minorative cure of diseases of process consists in withdrawing the ordinary stimuli, and in applying reductive remedies, in order, that by reducing the physiological force, the morbid vital process may cease to increase, or may be dissipated and destroyed.

This, and no other, is the cure which we in the greatest number of diseases effect, and, by thus reducing them in degree and violence, we afford an opportunity for the morbid vital process, after being exhausted, by those laws to which every process of life is obedient, to terminate naturally. From this, it becomes easy to understand the maxims of the ancients, useful and valuable above all others, by which they reputed medicine to be the follower, not the comptroller, of nature. Brown, from not having sufficiently considered the modes of living processes, believed them to be altogether passive, in the same manner as he had regarded all diseases to be simple changes of grade, so that, either by elevating or lowering the excitement, without having particular specifics, he fancied that art could effect the specific cure of all diseases. This most mischievous hypothesis passing as a physiological principle among the Rasorians, has so operated that

they have not had much more success in practice than the Brownonians, which their better indications promised; and, in truth, the tury for contra-stimulants, given without moderation, and ill-timed, could not be less hurtful than the stimulants, which the Brownonians, without being aware of it, administered in combination with some reductive remedies.

It appears to us, that nothing more is requisite to the school of contra-stimulantists, in order that their practice should become as successful as any other ever can be, than a theory, whether it be ours or any other, which limits the time, the dose, and the violence of the use of reductive remedies, to be given against morbid processes. We shall ardently strive in this particular to approach the ancients, as much in the particular case of every disease of which we shall treat, as in this place, where we refrain not from adding the following general maxim:—

The lowering of the forces, in morbid processes, ought never to be short of what is required by the violence and nature of the disease, and never greater than what can be conveniently and easily borne by the patient.

CHAPTER XIII.

OF CLINICAL INDUCTION, APPLIED PARTICULARLY
TO THE PALLIATIVE CURE OF DISEASES.

We observed, in the tenth chapter, that the palliative cure could be made with remedies, not only analagous, but also contrary to those which effect the radical cure of diseases. Now, on the palliative cure analagous to the radical cure, there is no room for comment, since this is approved by all schools and by all physicians; in fact, there is certainly no physician who would neglect a local bleeding, an edmolient cataplasm, a discutient ointment, to calm a pain, or any other particular symptom of a morbid process, against which reductive means may be generally required: but the modern schools find a difficulty in admitting a palliative cure composed of remedies which are contrary to those of the radical cure; nevertheless, we undertake to demonstrate, both that such a cure can be in fact verified, and that, with due caution, it is allowable sometimes to avail ourselves of it. 1. That in fact the palliative cure may be used in opposition to the radical cure; there is not a physician who can deny it. Opium lulls pain, even in pleuritic and every other disease, which has been manifestly more than hyperstenic; but the harm which arises from its use to a person

affected with pleurisy, shews evidently, both that the opium has acted as an excitant, that the pleurisy is hyperstenic, and that the lulling of the pain has been obtained by a remedy contrary to that required for eradicating the disease; so, by tonic astringents, we obtain at times no more than the cessation of a flux, the effect of an hyperstenic disease, and subsequently the disease is exasperated, and increases in degree still more considerably.

By following our theory, such a fact does not remain obscure: because we say that the morbid pleuritic excitement, from which the pain proceeds, is different not only in degree but in kind from the excitement of the opium, which is also morbid and hyperstenic, and from which arises the stupefaction or lulling of the pain; for which reason the two being conjoined together, the excitement of the opium is overcome, and it happens that although the pleuritic hypersthenia may be increased, yet the pain remains lulled by the narcotic. 2. That a cure such as this, is for the most part to be disapproved, every one agrees, since a soothing but transient alleviation might bring along with it irreparable mischief; but it may happen sometimes that the palliative advantage which is obtained by this method, is greater than any possible future harm; and in such a case, a physician who is an exact calculator, will not fail to take advantage of it, as physicians of all times have done, and principally, among the rest, the great Sydenham. From all this arise the following practical precepts: 1. That to alleviate

employ remedies contrary to the radical, when the disease is of such a nature that every light increase of its degree may bring serious danger: 2. When a disease is of such a nature, that, though increased somewhat in degree, it cannot be productive of any evil consequence, while, according to former experience, the palliative remedy promises alleviation of an urgent symptom, it is assuredly allowable to employ a palliative remedy, although it should be contrary to the radical cure, especially if the symptom is by itself more terrible or more painful than even the disease. Thus opium is commonly used for alleviating pain in syphilis, in cancer, in colic, and in some wounds, &c. We employed opium in this manner, with the consent of our respectable colleagues, in a case of lumbago which afflicted a respectable personage. The pain was so acute and obstinate, that the patient could at no time remain in bed with sufficient tranquillity to admit of relaxant diaphoretics, nor could he leave his bed to take a bath, or to obey the action of purgatives. The hyocianus proved ineffectual, and local bleeding insufficient. The fifth day passed without fever, and without any symptom menacing phlogosis in any internal organ. With the obstinacy of the pain, the other hypersthenic symptoms did not fail to increase. Opium was given liberally, so as to lull the pain. On the sixth day the bath, diaphoretics, and purgatives, could be administered without inconvenience; sufficient evacuations were obtained. On the seventh there was no longer lumbago.

We ought in conclusion to state, that in those rare cases in which we have directed this mode of treatment, we have contrived to have the different remedies given at periods so distant as not to be confounded ; having always found those compound mixtures, which empirics and theorists so often make of opposite remedies, produce, among other evils, such confusion in their operations as to render it impossible to see whether the individual medicines acted usefully or hurtfully.

CHAPTER XIV.

OF CLINICAL INDUCTION, APPLIED PARTICULARLY TO THE PROPHYLACTIC CURE OF DISEASES.

The prophylactic cure has precisely the same divisions as the palliative ; that is to say, the remedies which are employed to prevent the paroxysm, or the return of a disease, may be analogous, or may be contrary to those which afterwards ought to be used in the attack of the disease, or in its paroxysm. Concerning the theory of this cure we shall add nothing, since, according to our hypothesis, it is no other than that already explained in the preceding chapter, on the palliative cure. With respect to

the practice, we find that facts, certain and common, prove the truth of our opinion ; for example, blood-letting may be useful to cure a palpitation of the heart, and, at the same time, to prevent the paroxysm ; but the bark and stimulants, so useful to prevent the return of the paroxysm of a periodical fever, every one knows would be most hurtful, if they were given during the paroxysm. In this place we shall not treat more at large of the prophylactic cure, as contrary to the radical, intending to discuss the matter fully, when, in the book on fevers, we shall demonstrate that the bark, in effecting the cure of periodical fevers, does in truth operate in no other manner, than contrary to that of the remedies proper for the radical cure of such fevers.

The prophylactic cure, as well as the palliative, if it ever happens to be composed of remedies fit also for the radical cure of the disease, ought never to be omitted ; it being always a good maxim, that it is better and easier to prevent, than to eradicate diseases. But if a remedy, good to prevent a disease, should be hurtful in the act of the paroxysm, it is necessary to exhibit it with caution, although rather less so, than we observed to be necessary in the palliative cure, because it is sufficient to abstain from the use of it when any principle forbids it, or when some residue of a paroxysm still remains, and in the treatment of diseases which do not allow their paroxysm to be prevented with impunity, as is sometimes the case with the gout.

CHAPTER XV.

OF THE PROGNOSIS IN GENERAL.

In the prognosis of diseases it has been customary to employ hypothesis rather more sparingly, than in any other part of practical medicine; and, in this chapter, we shall explain those general rules only, which arise from strict clinical induction, and by which may be foreseen, whether the event of the disease shall prove fortunate or unfortunate. But, as the goodness or badness of the result of a disease always bears a proportion to the degree of its malignity, so it will be understood, that the present general rules are of value, only when they are wisely combined with those particular data.

1. *Constitution of the patient.* Galen has wisely given, as the principal point to be observed, in order to be able to make an exact prognostic, the state of the strength of the patient compared with the severity of his disease, and has said, in the language of Hippocrates:—*That things are the worse when the disease has most crudities, whilst nature is weakest or exhausted*; which ought to be, in modern language,—*when the physiological forces are most feeble, and the pathological state the most grave.* For which reason, any disease is always to be considered more dangerous when it occurs in children, in aged persons, in bad habits, whe-

ther weakened by other diseases, or from the continuance of the same disease.

Occasional Causes. When the occasional causes, which have predisposed to, or produced a disease, are most powerful, or when they have operated violently, unobservedly, and for a long time, it may be expected that the disease will have a termination the less fortunate, or that it will endure the longer.

Proximate Cause. The prognosis depends principally on the exact knowledge of the proximate cause of the disease, and of the obstacles which art has to encounter in eradicating it: because, as by the diagnosis is determined whether the disease be curable or not, of long or short duration, noxious or innocent, capable or incapable either of a radical, minorative, palliative, or prophylactic cure, so in the prognosis we announce what shall be the event of the disease, if left to its natural course, and what benefit may be expected from art.

Seat of the Disease. The same disease may vary greatly in its effects and results, according as the organ which it affects is more or less important. It is a general maxim, that no disease proves fatal except by involving some important organ, or disturbing some important function; for which reason, in order that a prognosis be perfect, it is necessary that it should depend principally upon the exact application of anatomy and physiology to practice.

Form of the Disease. The duration and the danger of a disease depend upon the variety of form

assumed by it, whether it be inflammation, or obstruction, or congestion, or a nervous affection, or a discharge, &c. and by comparing our anatomical and physiological observations on the seat of the disease, with the form which it assumes, our prognosis may be given with more precision.

Transmutations. Most diseases are capable of changing their seat and form ; and, when we carefully investigate their phenomena, it is not difficult to see whether a metastasis has threatened, or has already commenced. Such transmutations may be useful or hurtful, and may afford means of estimating what result is to be expected.

Character. A disease, though produced by the same causes, and under the same circumstances, may be more or less obstinate or tractable, violent or slow, and consequently more or less deadly or curable. In this manner, abstractly speaking, are physicians accustomed to consider the *character* of diseases. In fact there are some diseases, of a character so malignant, that nothing can be effected against them by all the power of medicine ; and at other times they are so benign, that there is not much exertion of art required to dissipate them. The particular nature of a disease cannot be detected but by an experienced eye, for it is to experience that the oldest physicians are indebted for the justness of their prognoses.

Concurrence of exterior things. There is no disease which may not receive great benefit from the ability of a physician, from the comforts of life,

from the care of attendants, and from cautious, scrupulous conduct on the part of the patient. An expert physician will reflect on these things, though exterior to the disease, and ascertain the favourable or unfavourable circumstances which he perceives, so as to accomplish a cure, and to secure his object.

BOOK SECOND.

OF GENERAL MORBID FORMS.



CHAPTER I.

OF INFLAMMATION, OBSTRUCTION, AND CONGESTION.

Phenomenology. Inflammation, obstruction, and congestion, are as similar in their phenomena, as they are analagous in their nature. Swelling redness, heat, and pain, are phenomena proper to one and all of these forms of disease, which, as they are differently combined, produce the distinctions of name and appearance. In proportion as the heat is ardent, the pain acute, the redness bright, and the swelling elastic, does the disease require to be called *inflammation*; it is termed *obstruction*, when the swelling is great and hard, the heat slight, the redness obscure, and the pain obtuse. Lastly, according to the Latin, we term *congestion* a collection of the humours in any part, whereby the

part is swelled but soft, and, besides, is rendered obtusely painful, somewhat hot, and of a red colour.

Between inflammation, obstruction, and congestion, there are again some intermediate forms, which physicians are accustomed to indicate by adding a convenient epithet to the names proper to the principal forms. For example: a chronic inflammation, very hard, without much heat, is called either a slow inflammation or a hot obstruction: a swelling very hot and rather soft, is called a hot congestion, inflammatory engorgement, or congestive inflammation. Thus, obstruction is distinguished into humid and dry; in the humid the part is more bulky than hard; and in the dry, on the contrary, it is more hard than large, sometimes it is even less than ordinary, while the hardness is great. Thus also congestion is distinguished into sanguineous, bilious, phlegmatic, &c. according as, in the afflux of humours, there predominates blood, bile, or lymph. Such variations as these are innumerable, but, as they are easily learnt at the bed-side of the sick, it would be useless to describe them minutely here.

The visible alterations which, in these forms of disease, are observed to take place in the structure of a part, are the following: in the cellular tissue of an organ there accumulates a fluid more dense than that thin lymph which naturally moistens the part in the healthy state; in inflammation this humour coagulates, as the coaguable lymph of the blood when it is made to coagulate; in obstruction it becomes

more hard and dry ; in congestion it remains liquid, either white, or yellow, or sanguinolent. In all the three of these morbid forms the vessels of the part, and those adjacent, are enlarged, then become visible and full of blood, the smaller vessels, which are not so in the natural state : and, lastly, in the opinion of some authors there spring up, and are developed, new vessels which the organ did not originally possess. The lesions again which a part may suffer, as effects of inflammation, obstruction, and congestion, shall be described hereafter. In great inflammations, accompanied with fever, the blood drawn from the veins is suddenly replaced, it has little or no serum, and becomes covered with a white crust, sometimes yellowish or greenish, which, from its resemblance to the hide of an animal, is termed *cotenna inflammatoria*, in English, the buffy coat.

Inflammation may be acute or chronic ; but it is to be observed, that the more accurately it possesses the true inflammatory characters the more acute it is ; and the more chronic it is, so much the more does it participate in the phenomena, and of the nature of obstruction and congestion. So, contrarywise, may we say of obstruction. It may be acute or chronic ; but the more it holds to the true character of obstruction, so much the more is it chronic, and the more acute it is, so much the more does it participate of the phenomena, and of the nature of inflammation or congestion. Finally, congestion may be acute or chronic ; and, being acute, participates of the nature and phenomena of

inflammation; whilst, being chronic, it is sure to participate of the phenomena and nature of obstruction.

Inflammation, obstruction, and congestion, may have either a continued or a periodical course: they most commonly have a continued progress, but it is not rare, especially when they are elements of a periodical disease, that they also suffer periodically both some increase and diminution.

This is sufficient to establish that these morbid forms may have a periodical course; because it is not necessary, as some would have it, that they should intermit, to prove that they may be periodical, since every one knows, that even in fever, the intermission is not the characteristic of the periodical or continued nature of the same, as we shall observe in its proper place. So also, of obstruction, only it may be said, that though it may have a periodical course, yet, in the decline of the disease, it never has a perfect intermission; but to deny that inflammation and congestion, when they have not produced some internal lesion, may be both periodical and intermittent, is contrary to reason and the most common experience.

Etiological pathology. There is not a living body which is not naturally disposed to inflammation, obstruction, and congestion; and, therefore, no particular predisponent cause is required for the production of such morbid forms. The weak are indeed most subject thereto; but this will be well understood when, in treating of a bad habit of

body, we shall explain, how it consists in the whole body, or some particular organ or parts of the machine, being slightly and in an occult manner pre-disposed, so that, on every new and slight occasion, there readily arises, and is manifested an appearance of inflammation, obstruction, or congestion.

With respect to the occasional causes, we know from certain experience, that they follow no determinate rule in producing these morbid forms; because, 1. Whether they be excitants or debilitants; whether the usual non-naturals immoderately used, or new agents to which the body is not accustomed; let them have operated simply from excess or defect, or so immoderately as to produce irritation, whether they be naturally irritants or not, they are able to produce every one of these forms of disease. 2. The longer and the more violently they operate, the more readily and vigorously springs up the morbid form as the corresponding effect; and still more so, if the causes have been many, and of different and opposite natures, and have acted together, or in rapid succession: in fact, the alternations of heat and cold, humidity and dryness, motion and rest, &c. are hurtful beyond every thing else. 3. Upon any new and slight occasion, every one of these morbid forms easily changes into another; and hence inflammation becomes obstruction, congestion inflammation, &c.

In respect again to the proximate cause of these forms of disease, it is almost superfluous to proceed to its demonstration, since, as long as they

are simple *states*, they consist in a simple change of degree, and, when they are established as *processes*, they consist in a change of mode in the vital action, which proves to be always hyperstenic, whatever may have been the remote causes: since such a demonstration may be gathered from what is said in the preceding book: and since it may be observed, in fact, that the morbid degree of an inflammatory process, whether obstructive or congestive, is always such as corresponds to the particular nature of the disease, and not such in extent as when it arose from the causes at the time it was a simple morbid *state*.

An etiological principle thus established on the nature of inflammation, obstruction, and congestion, is altogether at variance with that which the Brownian schools have maintained; inasmuch as Brown, esteeming the morbid processes to be passive, as in his view was every thing pertaining to life, judged that the morbid processes of inflammation, obstruction, and congestion, either hyperstenic or hypostenic, ought to correspond in their nature with their remote causes. Moreover, the Brownonians thought that hyperstenia could exist only in the very acute inflammations, such as were attended with considerable heat and pain, and occurred in the young and vigorous; while they regarded as hypostenic, all obstructions, congestions, and inflammations, whether slow, or in persons of feeble habit. The theoretical confutation of such an error has been given in the preceding book, and the practical will

be given when we treat of each disease which may have some one of the forms above spoken of. We wish to anticipate here only this observation, that the Brownonians themselves, in all these diseases, employ those relaxant means, which the ancients, guided by experience solely, had found advantageous, and which they also gave as purgatives: so that the Brownonians, from the error of their hypothesis, considering excitants to be relaxant remedies, do nothing less than incongruously unite them to true corroborants. But, allowing these remedies to stand over for the present, we propose to establish the following practical maxim, as arising from the above-mentioned etiological principle. “All inflammations
“ and obstructions are hyperstenic throughout the
“ whole of their course; congestions, only when they
“ exist in morbid states, may be hypostenic or hyperstenic, according as they arise from excitant or
“ debilitant causes: but, even when they arise from
“ debilitant causes, if they be established as morbid
“ processes, or if they be changed into inflammations
“ or obstructions, they immediately become hyperstenic.” The second part of this maxim requires an example: cold, grief, sloth, produce an afflux upon the heart, the liver, or the brain; while the causes remain, and no more than a simple congestive state is manifested, we admit this to be hypostenic, and to require motion, heat, joy, and the other excitants; but, should the congestive process remain after the causes have been removed, or, should there be manifested, as sometimes happens, an

acute or chronic inflammation or obstruction of the heart, liver, or brain, we must believe that the disease has become hyperstenic, and ought not to employ any but the old means, consisting of antiphlogistic, deobstruent, and resolvent, or relaxant remedies, without more excitants.

That great man Boerhaave, who, beyond any other, studied the views of the ancients, was aware of the identity of the proximate causes of these morbid forms, which he regarded as consisting in an obstruction of the minute vessels of an organ; for which reason he made use of the word *obstruction*, as a general term to express the essence of these three distinct morbid forms, in the same manner as the modern Italian schools use the word *phlogosis*. And although the idea of Boerhaave was rather rude, as being derived from mechanical rather than from vital laws, yet he succeeded better in practice than Physicians of more modern schools, inasmuch as the living process was considered, in those obstructions of vessels, as altered in quality, no less than in degree. On this account the ancients, while they exhibited relaxant remedies, were careful to reduce the strength as little as possible, whilst the moderns, in the treatment of *phlogosis*, from considering the process of life to be augmented only in degree, are led to observe no measure in reducing the strength of the patient. Our hypothesis possesses an advantage over the Brownonians, from admitting the hyperstenic sameness of these morbid forms, and over the modern *contra-*

stimulantists, from our being able to observe the moderation of the ancients in the use of relaxant means, because we admit the living process to be changed in mode, no less than in degree.

2. The strength or degree of hyperstenia in inflammation, obstruction, and congestion, must be estimated both by its violence and by its pertinacity. Many obstinately believe that a swelling which is very hot, tense, and painful, and which cannot but have a rapid course, ought to be esteemed hyperstenic; but that another less hot, less painful, rather soft or rather hard, and very obstinate, ought to be regarded as hypostenic. Moreover a modern writer has gone so far as to say, that acute diseases ought to be considered as hyperstenic, and the chronic as hypostenic; from which it appears that this writer must have ill understood either the ancient or modern doctrines.

And, in truth, it never has been believed that disease changes its essence for being acute or chronic. On the contrary, the more chronic and obstinate a disease is, so much the more are the most efficacious relaxant remedies indicated and easily borne.

An example of this error is afforded by the surgeons, even of the present day. If the surface of a wound be affected with violent inflammation, they say that it wants adhesion, and they distinguish between cases in which adhesion is prevented by excess and those in which it is prevented by defect of inflammatory action. Now, if the in-

flamed part is hot, tense, painful, and elastic, they say that the inflammation is excessive, because it is violent ; and, if the part is much swelled and soft, or dry and hard, but not very hot nor discoloured, they say the inflammation is defective, because it is slow. But they should reflect, that, in this slow inflammation, obstinacy makes up for the want of violence ; that the obstructed appearance or congestion of the surface of a wound, always proves the disease to be the more serious ; and that the importance of a disease ought to be estimated, according to the obstacle which it opposes to the restoration of health. For this reason, in such inflammations, the disease ought to be considered more peculiarly hyperstenic, and, in fact, the most efficacious relaxants are tolerated by, and beneficial to the patient.

We can easily distinguish, then, the greater or less degree of the same disease ; inasmuch as, in any given disease, the intensity of the morbid process appears greater or less according as the symptoms are greater or less. Upon this principle the adhesive inflammation in a wound is held for very little, because it has slight and passing symptoms, but every other inflammation ought to be regarded as intensely hyperstenic, so as it be marked by violence, or by obstinacy in the aggregate of the symptoms of the disease.

3d. Inflammation, obstruction, and congestion, differ between themselves in nature, not less than in degree ; further, the different species of inflammation, obstruction, and congestion, differ from each

other, both in mode and in degree. Who does not see the truth of this maxim in every disease? Can it be possible not to distinguish the nature of the true variolous pustule from the spurious, a phlegmon from erisipelas, this from a carbuncle, this from a schirroid tumour, this from an hæmorrhoidal congestion? We recognize, in these diseases, an hyperstenic sameness, a great resemblance in nature, but we cannot help observing, that they differ in their qualities, as well as in the degree of hyperstenia. Moreover, there is a rule to discover very easily the degrees in which they differ from, or resemble each other, namely, the more they are alike, the more readily they combine with one another, and the contrary.

Diagnosis. When inflammations, obstructions, and congestions are external, they are visible to the eye, but, when they are internal, it is necessary to judge of them from the continued fixed pain, by which anatomy points out the part affected; from its altered condition and consistency, (if it happen that we can feel it with the hand through the external integuments); from the state of its functions, which we shall observe to be liable to peculiar alterations in each disease of similar form; from the fever; from the alteration in the colour and quality of the body; and, lastly, from the absence of the signs of other diseases. Sometimes we see an internal disease wanting all the data necessary to enable us to judge, whether it be one or other of these morbid forms, and whether it be simple, or complicated with a nervous affection,

with wounds, or with suppuration, &c. of the part affected: but we shall also see that such a want of diagnostic characters, though rendering the prognosis difficult, is rarely hurtful in practice, or prejudicial to the cure. It is not difficult to distinguish, in the greater number of cases occurring in practice, whether inflammation, obstruction, or congestion, exist as states, or as morbid processes; because, when any affection is seen to remain fixed, and also to acquire a necessary course, although the occasional causes should have ceased to act; when its degree is manifestly conformable to the particular nature of a disease, rather than to that of the particular causes; when it is observed to hold a course independent of the physiological state of the patient, and of the operation of the means employed; when, finally, its phenomenology is observed to be double, and the pathological part of the affection is not controlled by the physiological, it ought to be considered certain, that a morbid process is already established. Yet sometimes certainty is wanting for such a diagnosis, and especially when an inflammation, obstruction, or congestion arises, and, for some time, remains as a morbid state; and when they are passing, or ready to pass, or are newly passed into morbid processes. Such a want of certainty is not practically prejudicial in cases of inflammation, or obstruction, or in the case of congestion produced by an excitant cause; because it is always certain, that the form of the disease can be no other than hyperstenic, whether we regard it as a *state*, or as

a morbid process already established. But it is as difficult as it is necessary, at times, to distinguish whether a congestion produced by a debilitant cause exists as a state, or as a morbid process, for, in the first case, it ought to be considered as hypostenic, and treated with stimulants, and, in the second, as hyperstenic, and treated with relaxants; for example; a state of stupor, indicative of congestion in the brain, is produced from exposure to cold, or from the poison of mushrooms, or other narcotic contra-stimulants: how are we to know whether this be hypostenic, as its causes are, or whether it be not established as a process? In such a case recourse must be had to the consideration of the time elapsed, from the moment of the first operation of the causes to that of our observation; since, if it should appear that the debilitant agent is still operating, it becomes us to prescribe excitants, and, if so much time has passed, as to lead us to believe that the action of the agents has ceased, and that there remains the stupor as a phenomenon of a congestive process, it is necessary to order, without loss of time, the appropriate relaxant remedies, and, when the other data above-mentioned are wanting, this is the only circumstance on which it is proper to rest the diagnosis.

Prognosis. Inflammation, obstruction, and congestion, may proceed to resolution; so that the part affected becomes, as it was in health, only more or less susceptible of a renewal of the same disease; they may undergo a change, the one being converted

into the other, or into other forms of disease; as into nervous affections, suppuration, organic diseases, &c. when the disease does not undergo resolution, but is changed into another new disease; they may, lastly, proceed to gangrene, and thereby cause death. Now this is not the place to treat particularly of these terminations, since they must fall to be discussed separately, in the place where it is properly required; at present, we are only to explain those circumstances which enable us to foretell, whether a fortunate or unfortunate result is to be expected.

It is a general maxim in these, as in all other forms of disease, that, when the phenomena or symptoms preserve a due proportion between one another, there is less danger, than when any of the symptoms greatly exceeds the rest in intensity. By applying this general maxim to inflammation, obstruction, and congestion, their good or bad tendency may easily be perceived.

It has already been observed, that the phenomena of these three morbid forms are swelling, heat, redness, and pain. Therefore in an inflammation, when the swelling is not disproportioned to the heat, redness, and pain; and when the pain is not disproportioned to the swelling and redness; in short, when these four symptoms are duly proportioned between themselves, there is less danger than when any one greatly exceeds the rest. So, in an obstruction, the predominant symptom is the swelling, and, in proportion as it is small and soft; little sensible or painful; or not cold and discoloured, there

is the less danger attending it, and vice versa. Nevertheless, if an obstructed part were to become very hot, red, and painful, we should not fail to draw an equally unfavourable conclusion. And, lastly, in a congestion, the predominant symptom is the soft swelling of the part, arising from the collection of fluids; and, in this case, the nature and tendency of the affection is ascertained by the same rule. Besides these particulars, it is necessary to observe what kind and extent of change is produced, in either of these forms of disease, upon the functions of the part affected. According as the symptoms are more or less intense, we discover to what extent a part is affected, and, as its functions are more or less altered, we estimate how much the disease of one part may endanger the safety of the whole.

If we carefully observe how much the vital functions are affected by the intensity, and by the disproportion between the symptoms of a disease; how much the functions of the affected part are influenced; and to what degree this influence acts upon the whole frame; and hence, according to the second general rule of the prognosis, if we regard the physiological state of the patient, the occasional causes, and the proximate cause of the disease, the importance of the organ affected, &c. it will not be difficult to ascertain the nature, whether evil or innocent, of any disease consisting in inflammation, obstruction, or congestion.

CHAPTER II.

OF FEVER.

Phenomenology. We shall give two explanations of the nature of fever; in the first we shall shew two morbid characters only, which being found united in any individual, lead us to decide at once that that individual has fever; and, in the other, we shall give a succinct description of all the symptoms of fever.

If we find a man suffering, at one and the same time, a prostration of strength, or an oppression in the exercise of the animal functions, and an augmented pulsation in the arteries, or an increased impetus in the exercise of the vital functions, we may say, without fear of mistake, and for certain, this man has fever. If, in some fevers, the pulse appears less frequent than natural, as in the *algida* of Torti, yet it is to be observed, not only that its want of velocity is occasioned, by the great oppression sustained, but also, that it is still quicker than would appear proportionate to the extreme reduction of the powers of the body.

Again, particular symptoms of fever are distinguished into those of the access, height, and decline of the disease. In the *access* the pulse is oppressed, and, in proportion to the degree of oppres-

sion, it becomes quick, and, in the same proportion, is increased the prostration of strength, the thirst, the scarcity of visible excretions, the dryness and lividness of the skin, of the mucous surfaces, of ulcers, and of the nails, the shrinking of the soft parts, the diminution of the temperature, the sense of coldness, the shiverings, and rigors. When a fever is at the *height* the pulse dilates, and, in proportion as it becomes full, its rapidity is diminished : nevertheless the prostration of strength continues, as well as the thirst, the defect of visible excretions, and the dryness of the skin, and mucous surfaces ; but the parts, previously livid, now become red, and, instead of a reduction, we have an increase of temperature, and a sense of heat, instead of a sense of cold. In the *decline*, the diminution and disappearance of all the above-mentioned symptoms takes place, and, in proportion to their disappearance, is the humidity of diseased surfaces, and the abundance and thickness of excretions. Fever, besides the prostration of strength, which constitutes its principal feature, always produces a physiological debility, and an extraordinary waste of the substance of the solids and fluids. The Brownonians alone, contrary to the views of all other men and physicians, have confounded, under the term hypostenia, the physiological debility proceeding from fever, with the prostration of strength, which is one element of that debility. By this confusion, all fevers, according to their view, ought to be regarded as hypostenic, as soon as the person attacked appears to be much op-

pressed and enfeebled. An error more gross than this certainly could not be made ; because, it is observed in every case, that no fever diminishes without the physiological debility being increased ; and, in the convalescence, when the weakness is greater than ever, the fever has disappeared ; whereas, if the view of Brown were correct, it ought to be quite the contrary.

Fever may have its course united, that is, continued ; or disjoined, that is, intermitting. If it be continued, it presents the phenomena of the access at its commencement ; the phenomena of the height, more or less severe, but continued for all the days that the disease runs ; and the phenomena of the decline at the termination of this. If, again, it has a disjoined or intermittent course, it presents the phenomena of the access, of the height, and of the decline, returning from time to time, for many times, in the course of the malady. The aggregate of the phenomena of all the three stages is called a febrile paroxysm ; and those, which have only one united paroxysm, from the beginning to the termination of the disease, are called continued fevers, in Greek *synochus* ; while those fevers, which have many separate paroxysms, are distinguished into remittents, (in Greek *synechi*) when, in the decline, the fever abates, but does not terminate ; and intermittents (in Greek *dialeipire*), when, at the end of the decline, the fever so far terminates, that, between an antecedent and subsequent paroxysm, there is some interval of time, during which it appears, that the disease has

nished. Some moderns have denied that there are continued fevers admitted by the Greeks; but we shall shew, in due time, the groundlessness of such a question.

When, in remittent and intermittent fevers, the paroxysms return regularly at a given time, observing regular periods, they are called periodical. Here it must be observed, that being periodical is not peculiar to fevers alone, since almost all diseases may have such a course, as we observed of inflammation, congestion, and obstruction, and as we shall observe of nervous diseases and of fluxes. Moreover, when we come to treat, in the following book, of periodical fevers in particular, we shall shew, that those, called *sympathetic*, are no other than fevers conjoined to some form of disease. But because, of all forms of disease, fever is principally remarkable for observing exact periods, periodical fevers are treated of in practical works, as a class of diseases distinct from other fevers.

Pathological etiology. There is not, in all practical medicine, any thing which presents so much resemblance, as we observe between inflammation and fever.

With respect to the pre-disponent causes, it is certain, that those who are most prone to inflammation, are also most readily affected with fever. As there is no person who is not naturally disposed to fever, so inflammation and fever being the most frequent of diseases, and oftener united than any other, it has been remarked by

practitioners, that their united power causes the death of the majority of mankind. It is, in fact, superfluous to say a word about the occasional causes of fever; inasmuch as these operate precisely in the same manner, as they have been stated to do in producing inflammation. Moreover, it may be observed, that there is no cause capable of producing inflammation of a part, which, by operating on the whole body, may not produce fever; and that there is no cause capable of producing fever, which, if its action be concentrated in one part, produces any other effect than inflammation.

Besides thus shewing the greatest analogy between the remote causes of fever and inflammation, we maintain, that any fever may be a predisposing cause, an occasional cause, a symptom, or an effect, of any inflammation, whether simple, congestive, or obstructive; and that any inflammation may be a predisposing cause, an occasional cause, a symptom, or an effect of any fever whatever.

With regard, again, to the proximate cause of fever, it is surprising, that, notwithstanding the great clearness and certainty of the remote causes, there has no question in practical medicine been subjected to more discussion and doubt, than the proximate cause of fever. It would seem, that those Greeks, who called it by the terms *pyretos*, *pyrexia*, and those Latins, who called it *febris*, that is, heat, burning, or ardour, (since these terms are synony-

mous with *phlogosis*), had understood fever to have the essential character, as it has the appearance, of inflammation ; and, in fact, by reading the Greek and Latin classics, it appears that they had not thought otherwise.

Some moderns have proposed, that diminution of the nervous energy should be considered as the first element of fever, and that the increased impetus of the vital movements should be regarded, either as the effect of that diminution, or as the effort which nature makes to remove it. In our judgment, this hypothesis has neither been logically maintained nor defended by its supporters, nor confuted by their opponents ; because, supposing that the first element of fever were the loss of nervous energy it ought to be demonstrated in what such a condition of the nervous system consists, and, when it is pretended, by the supporters of this opinion, that the remission of fever, from *atassia* (an injury) of the nervous fluid, or from *adynamia* (loss of power) of the nervous solids, or from hypostenia, they ought to be firmly opposed by demonstrating, as we shall do in treating of fevers in particular, that even when the first element of fever is a diminution of the nervous energy, (which, though not in all, certainly is the case in some), the affection of the nervous system peculiar to fever, (*la neurosi febrille*) consists in nothing but an ardour, a burning, or phlogosis of the nerves ; whence the conclusion is, that even the slow nervous fevers are no other than slow neuritides.

Brown distributed fevers into two kinds, and, to the two synonymous words *pyrexia* and *fever*, he took the liberty of giving opposite significations, calling by the term *pyrexia* those fevers in which the impetus of the arteries and the physiological strength predominate, and designating, as fevers, those *pyrexiaë* in which the diminution of the nervous energy and physiological debility predominate. Many Brownonians are of opinion, that this would be better expressed, by distinguishing fevers into *hyperstenic* and *hypostenic*.

It is easy to discover, in this hypothesis, the above-mentioned error of the moderns, by which the diminution of the nervous energy is assumed, without proof, to arise from weakness; and there is added another error peculiar to Brown, the confounding the essence of the disease with the physiological debility, which is manifestly only an effect, and not the cause of the disease. Boerhaave, who never separated his hypothesis from the spirit of the Greek doctrines, on the one hand, considered the essence of inflammation to consist in obstruction of the minute vessels of the part, and, on the other hand, he made the essence of fever to consist in a general obstruction of the minute vessels of the whole body: thus he regarded fever and inflammation as morbid forms of the same nature. This hypothesis has those same advantages, in the treatment of fever, that we shewed the Boerhaavian hypothesis of inflammation to have, although, in theory, it has the disadvantage of arising from a doctrine entirely mechanical.

As we consider fever to be of the same nature as inflammation, we may express the identity of these two morbid forms, by saying, that fever consists in a phlogosis generally spread throughout the body, while inflammation may well be said to be, (with the consent of Galen), a fever concentrated in one part. The followers of the modern Italian pathology ought not to dissent from this hypothesis, since, as we have already said, they use the word phlogosis in the same sense, that the Boerhaavians used the word obstruction.

The morbid form of fever being determined, it is easy to perceive what ought to be our idea of its proximate cause. In the first place, we ought to distinguish between a *febrile state* and a *febrile process*, and hence we say—1. That the debilitating remote causes do not immediately produce more than a congestion generally diffused, which, from causes internal or external, being changed into fever, the result is always hyperstenic: 2. That the exciting causes, such as heat, running, spirituous liquors, produce a violently heated state; which, although it be not commonly called fever, yet is in fact an hyperstenic febrile state. 3. That the irritative causes, in producing a fever, do nothing else, than produce a phlogosis throughout the body, of an hyperstenic nature: and, 4. That, whatever may have been the remote causes, and, however they may have operated, if the universal phlogosis be already established as a process, the fever that results is hyperstenic, as every inflammatory process is. So the

arguments which demonstrate the constantly hyperstenic nature of fever, are the following :

1. *Causes.* The identity of the causes of inflammation and fever is the chief argument which proves their identity, as diseases ; for which reason those arguments, which demonstrate the constantly hyperstenic nature of inflammation, are equally applicable to prove that of fever to be also constantly hyperstenic.

2. *Phenomena.* When treating of affections of the nervous system we shall demonstrate, that the diminution of the nervous energy is a symptom of the phlogosis of the nerves ; and, in treating of fluxes, we shall demonstrate, that the loss of flesh sustained by patients in fever, is an effect of the phlogosis of the excretory vessels. After which demonstrations, we shall have no difficulty, in the following books, when treating of each fever in particular, in shewing that all the phenomena of fever indicate its constantly hyperstenic nature. Let us only observe here, that the Brownonians, who distinguish fever into hyperstenic and hypostenic, cannot discover a single phenomenon peculiar to the hyperstenic, which may not occur in the supposed hypostenic class.

3. *Things useful and hurtful.* An irrefragable proof of the constantly hyperstenic nature of fever, arises from considering what use every person labouring under fever instinctively makes of the non-naturals or external things. He leaves off the use of all the ordinary stimulants which he can dis-

pense with, and helps himself sparingly to those others, which are either absolutely, or, from long custom, necessary. He asks for aqueous drinks; refuses, entirely or in part, spirituous liquors; food, unless it be thin or fluid, is always heavy and difficult to be borne, and is pernicious; he is averse to exercise; he derives relief from lying in bed, and encouraging perspiration; he desires sleep, and often dislikes a strong light, from which he withdraws. A contrary regimen is hurtful, in all cases without exception.

The Brownonians did not fail to regulate in this same manner the treatment of those fevers, which they regarded as hypostenic: but, believing living processes, according to their strange hypothesis, to be capable of changing in degree only, they considered all agents as stimulants, and deemed it not absurd to combine evacuants with stimulants, wine with antimonials, the bath with bark; braving the ancient physicians, the followers of the sound ancient practice, and of practical reasoning. What shall we say of the efficacy of the bark in cutting short intermittents? We shall draw from it the chief argument to demonstrate, that the nature of fever is constantly hyperstenic; because the bark proves hurtful, as every one knows, if it be administered during the paroxysm, which can be treated successfully by the relaxant method only. Now, every one must perceive, that it will always be easier for us to demonstrate in the proper place, that bark may effect the prophylactic cure of fever, al-

though such cure (as we said in the 14th chapter of the former book) be effected with a remedy of a nature contrary to the means required in the paroxysm, than for the Brownonians to explain, how, during the paroxysm of the supposed hypostenic intermittent, the use of bark cannot be tolerated, but rather proves hurtful, while the reductive regimen proves beneficial.

4. *Result of the Cure.* Although, at the instance of some anti-Hippocratists, the use of stimulants in fevers has been many times introduced, and they have boasted of cures obtained thereby, yet the Hippocratic practice has ever been triumphantly resorted to, and has always been followed by the most accurate observers. It has never been the object of this practice to torture the sick by force of privations and evacuations, but to make use of relaxant means, so as to diminish the fever as much as possible, and reduce the physiological powers of the body as little as possible.

5. *Analogy.* The phenomenology of fever is fixed and unchangeable, although different patients, or the same patient, in the various stages of the disease, may be in different states of vigour or debility. This shews the identity of the nature of all fevers.

In all fevers, even in the assumed hypostenic, when the disease diminishes, the strength does not cease to decrease, and when in convalescence the fever is at an end, it is not unusual for the debility to be still greater than ever: this also shews, as we observed, that the nature of all fevers is constantly hyperstenic.

To complete the pathological etiology of fever, we should have commented on the following maxims. 1. The more excessive the arterial impetus, the redness, the dryness, and heat, are in a fever, so much the more considerable are the prostration of strength, the lividness, certain symptomatic fluxes, and the coldness, equally indicating the highest hyperstenia. 2. A fever is constantly hyperstenic, whether it be acute, or chronic; impetuous and violent, or slow and protracted. 3. The various fevers differ in nature, not less than in degree; but we shall abstain from giving a demonstration of this, because, among other reasons, it could manifestly be no more than what we said on inflammation, and because it will be better treated of, when we come to speak of fevers in particular.

Diagnosis. The presence of fever is easily known; this being the most frequent of diseases, and that which continually gives employment to the physician. But what, then, is it necessary to determine in every case of fever? whether it exists as a *state* simply, or as a febrile *process*. We shall content ourselves, for the present, with such a diagnosis as we laid down general rules for, and explained in the last book; referring whatever it is fit to say in addition, till we come to treat of particular fevers.

Prognosis. The danger or severity of a fever, is in proportion to the degree of prostration of strength, and to the physiological debility, or dis-

turbance of the animal functions. If the pulse is not very tense, nor much oppressed, nor very quick; and the surfaces are not very dry, nor very red; and if the cold, on the access of the fever, is not very great, nor the heat excessive at the height, while it is moderate in the decline; and if there is not too much of any critical evacuation; and the fever is slight and short in the access, the developement of it regular, and the remission considerable: it may be considered as free from danger.

Symptoms contrary to the above, show the fever to be severe and dangerous. Among the signs of severity we reckon great prostration of strength, and the alienation of the senses, as worse than simple delirium; excessive physiological debility, as worse than excess of vigour; symptomatic fluxes, as worse than retention; lividity, as worse than extreme redness; lowness of temperature, as worse than its great elevation; smallness, straitness, and irregularity of the pulse, as worse than great fullness, tension, hardness, and quickness.

When we come to treat of fevers in particular, we shall collect the prognosis of each, from all these phenomena; indicating the greater or less danger of each form of fever, and shall give general rules for the prognosis applicable to particular cases.

CHAPTER III.

OF THE RESOLUTION, AND OF THE CHANGES WHICH
TAKE PLACE IN FEVER, INFLAMMATION,
OBSTRUCTION, AND CONGESTION.

Phenomenology. Every disease terminates either by resolution, when health is the result; or by conversion, when it changes into another disease; or by death. By conversion, a disease may change either its seat alone, or its form alone, or both at the same time. In changing its form, a disease may take another analagous form; as when inflammation changes into obstruction, congestion into inflammation, &c. or it may degenerate into a form altogether different from its first, as when inflammation terminates in the destruction of a part, or in morbid growths, &c.

For the present we omit any discussion of the termination in death, and of the conversions into diseases of other kinds, to which inflammation, obstruction, and congestion are liable, and shall treat only of their termination in resolution, and in conversions into one another.

The resolution of any disease, and especially of the morbid forms in question, is manifested by the following phenomena. The patient feels himself better, and relieved from the oppression which

he had felt during the disease ; but our duty is to ascertain, whether such a sense of relief be real or imaginary : because, if a patient should feel free from pain and uneasiness, but continue to support himself with difficulty, while the other symptoms of the disease go on increasing in severity, there would be reason to fear that such sense of relief was the herald of greater mischief, or even of death, rather than of resolution. 2. All the phenomena of the disease go on diminishing simultaneously and progressively, by little and little, that is, after the disease has completed the usual course incident to its nature. 3. In proportion as the pathological vital actions decline, the physiological debility becomes more and more apparent : and when the physiological strength and substance begin to be recovered, it may be considered certain that the resolution is completely established. 4. If the disease has been accompanied with a flux, this is observed to cease gradually, as the resolution is established ; and, if it has been the cause of unusual dryness or stiffness, the resolution is accompanied with a flow of one or more excretions. 5. The abundant excretions, whereby the resolution is marked, ought to occur in the part, at the time, and of the quality and quantity, required by the nature of the disease. The *conversion* of a disease is recognized by the following data. 1. When the time is already past, when the resolution of the disease was to be expected. 2. When the disease appears to decline, but not so regularly as we have

stated to be characteristic of resolution ; or when it becomes unseasonably and inordinately aggravated.

3. When signs of the new form and of the new seat, which the disease threatens to take, already begin to appear. With respect to changes of form, Fever, Inflammation, Obstruction, and Congestion are such, that each is capable of changing into the others. Fever is convertible into inflammation, obstruction, or congestion ; inflammation may become obstruction, it may produce a congestion, or it may disappear, and a fever spring up. An obstruction may change into inflammation, it may excite a fever, or it may produce congestion : lastly, congestion may become inflammation, may excite a fever, or may change into an obstruction.

With respect again to change of seat, this may be distinguished into two kinds, to wit, Diffusion and Translocation. 1. Diffusion consists in a morbid form not leaving its original seat, but propagating itself, and seizing upon organs akin or near to it, or proceeding to affect the whole body : thus, a fever may diffuse, in some organs, inflammation ; in others, congestion ; and in others, obstruction : an inflammation may diffuse a fever throughout the system ; or other inflammations, obstructions, or congestions, in the neighbouring organs : and the same effects may arise from obstruction or congestion. 2. Translocation, or metastasis, consists in a morbid form leaving entirely the organ or part where it was originally seated, and being translated, under the same or a different aspect, to

another seat ; as when fever terminates in inflammation, or when inflammation disappears, and gives rise to a fever, &c. In translocations it may happen, that a disease from an external seat passes into some internal organ : this is called *retropulsion* : or if, on the contrary, it quits an internal organ, and seats itself outwardly, this is termed *expulsion*.

Pathological etiology. It is not only necessary, in this place, to determine the causes, predisponent, occasional and proximate, of resolution and of conversion ; but also those from the agency of which it happens, that a disease ends in one, rather than another of these events. The predisponent cause, to which is owing the supervention of a fever, inflammation, or obstruction, if these remain as simple states, resides solely in the constitution of the patient ; because it is easily understood, that, in proportion to the strength of the constitution of a patient, is a disease prone to resolution, and that the more debilitated he is, so much the greater is the tendency to conversions of the form, and of the seat of the disease, whether it be a state or a process. With respect, again, to the nature of the disease, it is to be observed, that, if it be one of grade, it will always be disposed to resolution, when the constitution of the patient is not ill disposed, when the causes are removed in due time, and when the requisite assistance is not withheld ; so that, when it changes into a process, or, when it changes both form and seat, there must always be produced a bad termination, from the

want of one or more of the conditions above noticed. But if the disease has been established as a process, it is demonstrated, in the former book, that it must have a necessary course and a termination not decided, and, therefore, it depends principally on the nature of the disease, whether it will terminate in resolution or conversion. And, in fact, although any morbid process occurring in a strong constitution, and properly treated medically, more frequently terminates in resolution than in conversion; yet it may happen, that a disease properly treated, and occurring in a good constitution, may be converted, while the same disease, occurring in a bad constitution, may end in resolution, notwithstanding improper treatment. This piece of pathology, as old as it is true, is recognized in the distinction which the ancients made of diseases into *acritici* and *critici*, non-critical and critical. Morbid states are said to be non-critical, because their events depend, both on the means employed, and on the good constitution of the patient. Morbid processes are called critical, that is, subject to a decisive change at a given time, which depends principally on the intrinsic nature or quality of the disease. For this reason it is necessary to remember, that in fever, inflammation, obstruction, and congestion, when already established as processes, in order to ascertain, whether the means employed have been useful or hurtful, not one case in particular must be looked to, but either an account of the result of many and similar cases must be taken;

or we must calculate, whether, in the course of the cure, the result has been an alleviation or aggravation of the symptoms.

With respect to the occasional causes we observe, that resolution can be effected only by those means which are indicated ; to wit, stimulants only in hypostenic congestion, and relaxants in all other cases ; and, also, to ensure success, they must be given as requisite, that is, in due time, and suitable doses. A slow and pusillanimous practice, by omitting the exhibition of the necessary means in proper time, may permit the conversion of a fever, inflammation, &c. which, with proper assistance, might have terminated in resolution. And, on the contrary, by employing relaxant remedies harshly, they may act as irritants. It is possible, by the barbarous and improper use of proper remedies, to cause one disease to change into another, in the same manner as if stimulants had been given, instead of relaxants, even in cases where the disease might have been of so mild a character, that, if properly treated, it might have terminated in resolution. For which reason we ought to adhere to the maxim of the ancients, who have always inculcated, that a medicine ought to be at once efficacious and bland in its operation ; which we may easily do, by remembering the canon, according to which we directed, that relaxant means ought never to be different in quality, nor less in quantity, than is required by the disease, while they are such as can be borne without inconvenience by the patient.

Irritative causes, again, are by their nature, in every dose, at every period, and in every case, inimical to resolution, and prove efficient causes of conversions, not less than of degenerations into other diseases.

With respect to the proximate cause, it is easily seen, that resolution proceeds by a regular and determinate change, whether that change be in the degree alone, or not only in the degree, but affecting the mode in which the vital power operated during the disease; and that conversion consists in a change, which the vital action undergoes, from one degree of disease to another degree, also morbid, or from a degree and a kind of disease, into other degrees and kinds, also morbid.

Diagnosis. Resolutions and conversions may be recognized, by their particular phenomenology, which we have already given. The case most important in a pathological point of view, is that in which a congestion, hypostenic in degree, becomes hyperstenic, by being changed into a process: but of this we have spoken in the first chapter. In all other cases of conversion, since the change is from one variety of hyperstения to another, the chief question is not one of pathology, but of nosology, because it relates, not to a change of the nature, but of the name, duration and event of a disease.

Pregnosis. Resolution is always the most desirable, as it is the most fortunate termination of every disease; but though conversion, as compared to resolution, be always a less fortunate termination

of a disease, yet, as compared to death, to conversion into a worse form, or to translocation to a more important organ, it may be desirable. For which reason, we ought to consider as constant rules of practice:—1. That every expulsion is advantageous, and every retropulsion hurtful: 2. that the change of a morbid form into another more inclined to resolution, is advantageous, and the contrary hurtful. Further, in some diseases which are not curable, radically, we shall find that the only resource of our art, is to procure a favorable transmutation of a fever, inflammation, obstruction, or congestion, either with regard to their seats or forms.

CHAPTER IV.

OF THE CURE OF FEVER, INFLAMMATION, CONGESTION, AND OBSTRUCTION, IN GENERAL.

Specific cure. Inasmuch as sulphur, which is a certain specific against scabies; mercury, which is equally a specific against syphilis; antimony and iron, which we shall see, perhaps, to be specifics also against herpes, scrophula, and rachitis, do not operate as stimulants, but only as relaxants; so,

for this reason, they operate in fevers, inflammations, congestions, and obstructions of a scabby, syphilitic, herpetic, scrophulous, and rachitic origin, at once as specifics, cancelling the peculiar qualities of such diseases, and generally, by diminishing the degree of such morbid forms. After this we ought to notice two things; in the first place, that even in those diseases, in which it is doubtful whether the cause be or be not scabby, syphilitic, or herpetic, it is usual, if no reason forbid, to employ the said remedies; because, even where there is no opportunity for them to act specifically, they are still advantageous, simply as relaxants; and, on the other hand, when they are employed as specifics, it is necessary to use them with such moderation, as to prevent their proving irritants; as we also observed of relaxant agents in general.

Palliative Cure. When specific means are wanting, we ought to have recourse to agents simply palliative of the degrees of inflammation, obstruction, or congestion. With respect to a fever, it is proper that we should determine, 1. When the means ought to be stimulant, and when debilitant; and, 2. in case they ought to be debilitant, we have to determine, which and how many relaxant remedies we should use, at what periods, and in what manner, we should employ them.

The first question we have already discussed; since, having practically demonstrated that congestions are hypostenic only when sustained as mor-

bid states by debilitating causes, it must be concluded; that, in this case alone, should the method of cure be excitant, and that, in all other cases, whether of hypersthenic congestions, or of congestions originally hyposthenic, but already become morbid processes, or of inflammations, obstructions, or fevers, in whatever manner originally established, the method of cure ought to be relaxant. For example, let us suppose cold to be producing torpor in a foot: it is proper to apply heat gradually, in order that the torpor be dispersed; but for torpor remaining in a foot, in consequence of cold suffered some time past, it does not certainly become us to make use of excitants, but rather of relaxants, as friction with volatile liniment, blisters, &c. If grief, fear, or sadness be producing a congestion at the breast, which is manifested by the patient's distress; joy, æther, wine, and food, rightly used, disperse it; but if, after the causes have ceased to act, the congestion remain, so that the affliction is still suffered, it is certainly proper to disperse it by the use of ipecacuanha, polygala senega, kermes, gum ammoniac, and the other usual relaxants.

The second question will be determined in giving the solution of the following problems.

1. When is it proper to employ those strong relaxants, which, if used beyond due measure, may act as irritants? The ancient and most common practice required, that, in fevers, inflammations, obstructions, and congestions, when very

acute, hot, and painful, in the first place, the cure should consist of blood-letting, fasting, and the emollients, and not the strong relaxants as acid, acrid, bitter, alkaline, or metallic medicines, until the first impetus of the disease should have passed; and that in fever, inflammation, obstruction, and congestion, when slow, obstinate, with little heat and pain, it is not so proper to use blood-letting and fasting, as the more powerful relaxants. In fact, a metallic solution, or the distilled water of lauro-cerasus, applied to a phlegmon, frequently prove hurtful, by acting as irritants; whereas, if, on the first impetus of a phlegmon, it has been treated by means of bleeding and emollients, the former remedies then act beneficially; or, if applied to inflammation, of a slow, obstructive, or congestive character, they are borne without inconvenience, and exert their regular relaxant power. Now, can we doubt, that in internal diseases, the same actions take place that are before our eyes in external affections? Is there a physician unacquainted with the truth of this remark? And, although some instances may have occurred, in which even the strongest relaxants may have been borne without inconvenience, and even with advantage, though employed freely, and in the most acute stage, at the first appearance of these morbid forms, yet shall these cases be sufficient to satisfy the mind of any physician of discernment, that there is no reason to fear, that, in the majority of instances, such means may prove irritant and hurtful.

How ought the strong relaxant remedies to be administered? In this, also, ancient and common experience requires, that, to prevent the strong relaxants from acting as irritants, it is proper never to administer them alone or by themselves, but with a bath, if we can, and with much drink, as broth hydromel, tisan, &c. Every physician must have seen this remark confirmed by experience.

3. If, in the production of a fever, inflammation, obstruction, or congestion, there has been a debilitating agent among the occasional causes, can we avail ourselves of this same agent, to bring about a resolution of the disease? We answer firmly, no, never. If emetic tartar has had any share in the production of gastritis, we may avail ourselves, in the cure, of every other relaxant remedy, but never of emetic tartar. If, in inducing pneumonia, cold has been concerned, we should never make use of cold to cure it. We know well, that, on this point, some might adduce cases, as examples inconsistent with our advice; but, for the present, it seems sufficient for us to advance this general maxim, as consistent with prudence, and drawn from regular practical induction; since there will be an opportunity, in the sequel, of reasoning on those particular cases, which might appear to be exceptions.

4. In the use of relaxant remedies, and especially of blood-letting and fasting, what respect ought to be had to the state of the physiological power? Whensoever our art wants specific means,

it, for the most part, can do good in no other way, than by subtracting from the physiological strength; yet physicians ought to consider it their duty to husband that strength, not heedlessly to dissipate it. For this reason, an experienced physician of discernment will not fear to repeat both bleeding and relaxant medicines, whilst they are required by the violence of a disease; being well persuaded, that one ounce of blood too much may kill a man, but that no man can die for a pound too little. But, if the disease should be, perchance, unsusceptible of resolution, or if, from being slight, no fear of death need be entertained, or, if the physiological strength may have been sufficiently reduced already, ought we to reduce them still further? In such cases it is proper, even while relaxant means are used, to allow food, although sparingly.

5. What regard ought to be had to the particular idiosyncrasy of the patient? The greatest possible; because, in severe diseases, for which it is necessary to use strong remedies, the advice of any physician, although not very learned, but who, being the ordinary attendant of the patient, is aware of what medicines agree or disagree, is of great value; he also is enabled, better than any other, to prescribe the method of cure, so that it shall prove sufficiently efficacious, but never cause irritation. Is it not common to meet with individuals who can bear the cicuta, squill, or mercury; yet not digitalis or antimony?

Every one may have already discovered, what happy consequences result from the principles of practical pathology, adopted in the theoretical part of these elements ; since, by having followed the principles of the new Italian medical doctrine, and admitted the hypersthenic nature of morbid processes, to be constantly the same and unchangeable, we are led always to prescribe, like the modern and most ancient schools, the relaxant method ; but, from having modified such principles, by our theory of the changes of mode, which belong to morbid living action, we are led to restrain the abuse of relaxant agents, so that our method, as it results from the above maxims, is the same that Hippocrates, from ancient experience, deemed the most advantageous.

Prophylactic Cure. Ought the bark to be esteemed febrifuge, or anti-periodical ?

The ascertained facts relative to this question are, 1. That the bark only prevents the return of periodical diseases, so that, if employed in diseases, which, though intermittent, are not of the true nature of periodicals, as in the spurious intermittents so called, it does no good, and often harm. 2. That the bark interrupts the course of periodical diseases, whatever be their form, whether from inflammations, nervous affections, or fluxes, &c. 3. That the bark, administered in the paroxysms of periodical diseases, not only does no good, but harm, and, therefore, must do harm in continued diseases. 4. That, during the paroxysms of perio-

dical diseases, the relaxant method is borne without inconvenience, and useful: in fact, even the Brownonians, in the paroxysm of a periodical disease, do not hesitate to employ debilitating means, and at times even blood-letting.

From these facts it manifestly appears, that the bark is to be considered an anti-periodical, not a febrifuge remedy. Moreover, though we cannot say, that it is beneficial in all fevers, but rather, that it is hurtful in such as are not periodical, on the other hand, it must be allowed to be beneficial, not only in fevers, but also in inflammations, nervous diseases, and fluxes, when they are periodical. Hence arises another question; namely, in what manner does the bark subdue periodical diseases? Two opinions might be formed on this question; that fevers and periodical diseases are hypostenic, and that the bark operates as a stimulant: but, in this way, it will be impossible to explain, why it is hurtful during the paroxysm, and, again, why, in the relaxant method, the use of cool drinks, the acids, fasting, keeping in bed, and the loss of blood, if required, are beneficial. The other opinion is, that morbid processes, though periodical, do not cease to be as much hyperstenic as if they were continued, and that the bark obscures the period of the diseases in question, as opium lulls their pain, although they may be hyperstenic. Here the difficulty is, to understand how it does not do harm, by augmenting the hyperstenia. In the present day, the first

opinion is the most general ; but we shall follow the second, although, in the schools, it be almost obsolete : and, as this is not the place to give such a demonstration as is necessary, because we have not yet treated of periodical diseases, we request the courteous reader, being made aware of these two opinions, alike difficult, not to allow his mind to be pre-occupied by either of them, but, suspend his judgment, until, in the following book, when treating of fevers in particular, in a chapter reserved for the purpose, we shall fully discuss the question, and shew which of those opinions is the more conformable to reason, and advantageous in practice.

Palliative Cure. We have observed, that, in irritative fevers, inflammations, congestions, and obstructions, the art of a physician has no resource, but to attempt the palliative cure, until either nature, or the art of surgery, or time, should have applied the specific cure, by expelling the cause, or by rendering it habitual, and no longer troublesome. Such a palliative cure, every one sees, ought to consist in very moderately subtracting the ordinary stimulants, in observing a regimen somewhat relaxant, and in sparingly adding some remedy also relaxant, in case the disease is irritable ; but whensoever, from strong and long continued irritation, some process is arising, or has already arisen, and become established, necessity requires, that the relaxant method should be increased in activity, and rendered as efficacious, as the violence of the fever, in

flammation, obstruction, or congestion, may require. In all other cases, the palliative remedies particularly used, whether stimulants, when the method of cure is stimulant, or debilitants, when the method is debilitant, ought to be employed, according to the same rules, as the radical remedies : namely, that they may prove as efficacious, as is required by the nature of the disease ; not more violent, than the physiological strength can bear, nor in such a manner as to prove irritant.

With respect to the palliative cure, when consisting of remedies of a nature contrary to the radical, as, for instance, when opium is employed to ease pain, or tonic astringents to restrain a flux, it is to be observed, that it is so easy for such means to excite much mischief in fevers, inflammations, congestions, and obstructions, that it becomes necessary to employ the greatest care, in attempting this method of cure, in diseases of these forms. For which reason, considering, as not sufficient, the cautions which we laid down on this subject, in the 13th chapter of the first book, we now add the following remarks. 1. In proportion as these morbid forms are acute and violent, is the danger to be apprehended in the use of remedies of a nature contrary to the radical. 2. In proportion as the danger of giving rise to a morbid process (in case the remedies should prove irritant) appears imminent or probable, it is proper to beware of such remedies. 3. In proportion as the symptoms, indicating the use of excitant remedies, are essential to the nature

of the fever, inflammation, obstruction, or congestion, and, as they necessarily belong to the disease itself, it is useless or prejudicial to employ them : 4. They can only be used safely, against pains, fluxes, or other symptoms, which are *epigenomena*, that is, adventitious, or arising from a cause totally different from that of the fever, inflammation, &c. For example, to soothe the pain of a cholic epigenomenon, and not an effect of a fever, we may use, for the moment, laudanum, although the patient be feverish, provided the fever be of such a nature as not to suffer from it ; but against the cough, the necessary effect of a pleurisy, it is never allowable to use opium.

Revulsives. We have said, in the preceding chapter, that transmutations of these morbid forms were advantageous, when proceeding from internal organs outwards ; for this reason physicians, besides the resolvent remedies, find it useful in fever, inflammation, obstruction, and congestion, to employ remedies which they call revulsive or revellent, because they believe it possible to produce, advantageously, an expulsion of the morbid form, and to bring it to the part where such remedies are applied.

These revulsive remedies are distinguished into temperants and inflammants ; the first, as cupping, local fomentations, emollient baths, operate so blandly, that they never can prove irritant ; the second, as blisters, rubefacients, moxa, setons, caustic, issues, as they may become irritants, ought to be practised only after blood-letting and emol-

lients have moderated the greater impetus of the disease.

Some moderns, supposing that means, which cause inflammation, produce an hyperstenia, do not believe that they can employ such means in those morbid forms, which we have shewn to be hyperstenic. Experience is altogether opposed to this conclusion, since there is not a physician, who has not found those means, which we have termed inflammants, advantageous, both as revulsives and relaxants, when care is taken, not to apply them in the first impetus of an acute disease; and, in the *materia medica*, we shall clearly shew how these means, although they produce inflammation, do not fail virtually to act as relaxants.

Febrifuge, antiphlogistic, deobstruent, and discutient remedies. The remedies, which really merit such titles, are those which operate by debilitating or moderating the physiological strength, and, are the only kind admissible in the height of fever, inflammation, &c. We have already stated, and shall shew, that excitants, when used to cure periodical diseases, cannot be called *febrifuge*, but ought properly to be called *antiperiodical* remedies.

When we come to treat particularly of febrile, inflammatory, obstructive, and congestive diseases; and in the *materia medica*, when we come to speak of the remedies useful in such diseases, we shall demonstrate in what manner, according to the variety of cases, we ought to regulate our practice. Treating,

1. Of the regimen of the non-naturals, of debilitants, or rather of the subduction of the usual stimulants. 2. Of blood-letting, and of water, externally in baths, or internally in drink. 3. Of vegetable substances, mucilaginous, oily, and saccharine, as emollients, which rarely or never can prove irritant. 4. Of acids, earths, alcalics, soaps, earthy and alkaline salts. 5. Of the vegetable, strong, acrid bitters, which, applied externally, are more or less caustic, and, employed without caution, may prove irritant: and 6. Of the metals and their preparations, which are the strongest relaxant, and whose action is the most permanent; used properly, they prove relaxant, while, when improperly used, they become irritants.

The means, again, which ought to be employed in periodical diseases, to cut short the period, and thus prevent a return of the paroxysm, are, 1. the corroborant regimen of the non-naturals; 2. the bitter, austere vegetables, and aromatics, which are distinguished from the strong, acrid bitters, by not being caustic, and by their being taken in large doses, without proving irritant or poisonous: 3. Aromatics, medicines containing alcohol, and opium, which, although of itself possessed of little efficacy in cutting short the period, may render yet the power of the austere, bitter aromatics more available: 4. The bark, which, as we shall shew, has perhaps a specific efficacy to prevent the return of the paroxysms of all periodical diseases.

CHAPTER V.

OF NERVOUS COMPLAINTS.

Phenomenology. With the nosologists, we term nervous, every disease peculiar to those organs which compose, in the largest physiological signification, the nervous system ; which are, the brain, the medulla, the ganglia, the nervous trunks, the nervous pulp, the organs of sense, the muscles, and the nervous branches, which enter into the organic composition of all organs.

All the phenomena of nervous diseases, may be reduced to five heads :—*pain*, that is, the disagreeable occurrence, acuteness of sensation ; *stupor*, its obtuseness, or the being numbed ; *convulsion*, or irregularly violent movements ; *torpor*, or the movements being morbidly slow ; *error*, the inexact relation between the perception, and those objects which excite a sensation or motion.

Pain receives denominations from its nature, or from its seat ; thus we say acute, pungent, dull, lancinating, burning ; and thus we say *cephalagia*, for the internal pain of the head ; *hemicrania*, for that of one half of the head externally ; *otalgia*, for that of the ear ; *odontalgia*, for that of a tooth ; *rachialgia*, for that of the spine ; *cardialgia*, for that of the cardia ; *colica*, for that of the colon ; for

nephralgia, for that of the kidneys; *lumbago*, for that of the loins; *laterale*, for that of one half of the thorax; *articulare*, for that of the joints; *hysteralgia*, for that of the uterus; *sciatica*, for that of the sciatic nerve, &c. Sometimes the painful sensation is peculiar to some disease, and then the pain takes its name from that disease; thus we say gouty, syphilitic, cancerous, &c..

Stupor, which resembles sleep, is called, according to its degrees, *sopor*, *coma*, *lethargo*, *caro*; these four, conjoined with torpor of all, or some voluntary muscles, is called *apoplexy*. *Catalepsy* and *extasy* consist in a strong abstraction; that is to say, that, by the too vivid exercise of one of the senses, or of the imagination, the other senses become affected with stupor. *Torpor*, if it extends to the entire suspension of motion, is called *palsy*; the palsy of one side is called *hemiplegia*, that of one half of the body transversely, either the superior or inferior half is called *paraplegia*. *Syncope*, *asphyxia*, *deliquium*, or swooning, is said of the temporary suspension of the senses, and of voluntary motion, perspiration, and of the action of the heart and arteries.

Convulsion, otherwise called *spasm*, is a violent involuntary action of certain muscles, and is distinguished into *tonic*, when the violent action is constant in one direction, and *clonic*, when it alternates between two opposite directions. *Tetanus* is the tonic convulsion of all, or some of the voluntary muscles; and, when the body is bent backwards, it

is called *opisthotonos*, and, when it is bent forwards, *emphrosthotos* ; and when it is eurved, as an arch, to one side, it is called *pleurosthotos*. *Trismus*, is the strong contraction of the muscles elevating the lower jaw ; and *spasmus cynicus*, the drawing of the face towards one ear. *Tremor* is said of the rapid agitation of a member, or of all the body ; *subsultus* is the rising of a member, or the tendons of the muscles of the same ; and *palpitation*, the tremulous motion of the internal organs. *Epilepsy* is the suspension of sense, accompanied by an extraordinary convulsion, tonic and clonic, of the muscles.

Amentia, is a fatuity so great that the reason is entirely abolished ; and *delirium*, total disorder of the judgment. *Melancholy*, the sad and inoffensive delirium ; and *mania*, the furious delirium, so that the patient, if not prevented, does an injury to himself and others. If the patient has a fixed object, on which his mind wanders, his delirium takes a particular name ; being denominated *nostalgia*, when he desires a return to his country ; *demonomania*, when he fears the devil, &c.

All these and the other nervous complaints shall be treated of, as particular maladies, and, accordingly, shall be defined and exactly described in the book on the diseases of the nerves : in this place, we have only sought to explain the vulgar meaning of the above terms, from being obliged to make use of them often, before we come to treat of them particularly.

Nervous diseases are distinguished into idiopathic and symptomatic. A disease is said to be idiopathic, when the visible morbid form shows itself simply under the appearance of pain, stupor, convulsion, torpor, or error: it is called symptomatic, when such phenomena do not shew themselves, but as symptoms of other manifest morbid forms, as inflammation, a flux, a wound, parturition, &c.

Every nervous disease is susceptible of every possible transmutation, both of seat and of form; and, in changing its form, it may assume another form, also nervous, as when pain changes into convulsion, convulsion into delirium, delirium into stupor, &c.; or it may take a form altogether different, as when a nervous affection changes into a fever, inflammation, congestion, flux, &c. Hippocrates has remarked, that the change of nervous complaints into a fever is favorable, and that of a fever into a nervous disease the reverse.

Nervous diseases may have a continued, remittent, or an intermittent course; and, when remittent or intermittent, they may also have a periodical course; in fact, when treating of the fevers called *concomitant*, we shall shew, that, when these are called nervous, they are nothing else than fevers conjoined with some nervous disorder, which proceeds periodically with them. Nervous disorders are reckoned mild, when the patient has the power of regulating his own motions; they judged severe, when he is obliged to have the aid of an assistant

for that purpose, and they are deemed the most serious, when any function of the nervous system is suspended, and the others are threatened with a sudden cessation.

As to every thing else belonging to their phenomenology, and, especially, as to the inevitableness of their course, when once established as morbid processes, nervous diseases have nothing particular, but are similar to every other morbid form.

Pathological Etiology. With respect to the disponent causes of nervous diseases, we say, with all other practitioners, that persons of a nervous or atrabilious temperament, persons naturally very sensible, or become so from having abused the functions of sense, and those who have the brain and organs of the nervous system very large, are found beyond measure pre-disposed to nervous complaints. This will be easily understood, when we consider that the vital functions of the nerves in the body being exerted beyond every other, the bad effects of the morbid occasional causes necessarily falls chiefly on that system. With all this it must be observed, that it is not unusual to find individuals, strongly pre-disposed to nervous affections, pass through their whole lives without suffering from them, and others, in no way disposed to the same, become victims to some nervous disorder.

Those irregularities in the use of the non-naturals, which are most effectual in preventing the regular discharge of the animal functions, as we shall observe when treating of them particularly, become

occasional causes of every kind of nervous complaint. The mode, again, in which they operate, is entirely similar to that which they follow, in producing other morbid forms; because, whether they be excitants or debilitants, they may produce any species of nervous disease whatever, and, more especially, when they happen to operate together, or in rapid succession, that is, as excitants and debilitants. 2. The irritant causes, more eminently than the simple excitants or debilitants, produce nervous disorders: may more, they produce nervous diseases, more frequently than any other morbid form.

With respect to the proximate cause of nervous diseases, physicians the most consummate in practice admit, that, in the whole practice of medicine, there is nothing more obscure than this, or more difficult to explain.

We may, therefore, well be surprized at the marvellous facility with which the Brownonians imagine, that they have solved so difficult a problem; they, in fact, observing, that every one, who suffers any nervous disorder, has his power of performing the animal functions diminished; and, adopting the absurd syllogism, that the end being deficient, is a proof that the power is wanting, they pretend to explain in two words, both the theory and the practice of nervous disorders.

The word nervous implies debility, *quod erat demonstrandum*; debility demands stimulants, *quod erat faciendum*! And things are at last come to such a pass, that the quacks and the Brownonians,

not only in nervous diseases, but in every other, when nervous phenomena appear, declare the nerves to be attacked; and such a phrase sufficing to prove the propriety and justness of exhibiting corroborants, they have ready at hand their *little stimulating mixtures*. Running for ever into a deluge of errors, they become ridiculous: but, as it is necessary, for the good of mankind and of our art, we shall return on the traces of the ancients, and do our best to render the doctrine of nervous diseases sound and philosophical.

It is manifest, that, in order to recognize the proximate cause of nervous diseases, it is necessary, in the first place, to determine, what is that morbid form which we call nervous; or what alteration the organs of the nervous system suffer in the mode of their physiological life, when to us they manifest pain, convulsion, stupor, torpor, and error. Such a knowledge flows from the solution of the two following questions.

1. What is the difference between pain, stupor, convulsion, torpor, and error? In other terms, do these different morbid phenomena depend upon the proximate cause of the disease, and the nature of nervous disorders, being different? Or may these phenomena be manifested, whatever may be, either the proximate cause of the disease, or the nature of nervous diseases?

The practical facts bearing upon the questions thus stated, are the following: 1. Under the immediate action of any agent whatever, whether stimu-

lant, debilitant, or irritant, there may arise pain, convulsion, stupor, torpor, and error: the poisons afford the most frequent examples of this. 2. During the same disease, and at the same time, in some organs, may be manifested pain and convulsion, and in others, stupor or torpor: this is seen in an epileptic paroxysm. 3. It is ordinarily the case that pain is conjoined with convulsion, and torpor with stupor; nevertheless, worms often occasion violent convulsions without pain; and it is not rare to observe, on some occasions, torpor without stupor, or even with increased sensibility. 4. In error, some sensations become preternaturally acute, and others are stupefied at the same time, and like discordance appears in the judgement. 5. Finally, it is observed, that there may be manifested in the same part, alternating, from hour to hour, pain and stupor, or convulsion and torpor: the *coma vigilans* is a manifest example of this. To express these facts in general terms, we say—*That a nervous disease, from the variation of some circumstance, of which, in practice, we cannot calculate either the form or the cause, may manifest either of the five morbid phenomena peculiar to it, and display them in any combination or alternation.*

This is enough for practice. But, in the present question, the physiologists believe, that they also should have their part in it, pretending to be able to explain particularly how pain, convulsion, stupor, &c. arise. And, as it is generally believed, that the nervous function is performed by means of an *imponderable* fluid, which they call nervous fluid,

so they attribute to the violence, slowness, or irregularity of this fluid, the origin of pain, convulsion, stupor, torpor, or error. Now, we have no faith in this and other similar theories, and are greatly afraid, that they are injurious, rather than beneficial in practice. Putting them therefore aside, and content to abide by the general fact stated above, as a principle of practice, we proceed to the discussion of the second question.

2. In what consists the alteration of the nerve in nervous disease ? or, more clearly, whatever may be the phenomena by which it is manifested, what is the morbid form by which the nerves are affected in nervous diseases ?

The organs, which compose the nervous system, are composed, as are all others, of membranes and of vessels ; and, besides this, they possess a particular filamentous pulp in the nerves, and a fibrous structure in the muscles. On this account, the alterations of which the nerves are susceptible, must be considered of two species : if the intrinsic mode of being of the nervous pulp should be changed, we may call the affection medullary : if, again, the nerves or the muscles suffer either an inflammation, or an obstruction, or a congestion, by an alteration in their common organic properties, in like manner as these properties in all other organs are changed by such morbid forms, we ought to call the nervous affection, resulting from such alteration, organic or common. That there may exist nervous organic disease, morbid anatomy puts beyond all doubt ; and that

there is an alteration in the nervous medulla, although the eyes cannot take immediate cognizance of it, we are assured by the evidence of facts, which we shall explain in treating of the nervous diseases individually. Moreover, physicians of all ages have admitted such difference to exist in nervous diseases, indicating it by words which they employed to distinguish nervous diseases into primary, essential, intrinsic, habitual, *sine materia*; and into secondary, ordinary, accidental, *cum materia*.

Now, there are some who would most willingly grant that organic nervous disorders are hyperstenic, if we would allow that, at least, the nervous medullary disorders should be regarded as hypostenic. But, opposing ourselves to so gross an error, let us reflect, that the distinction of nervous diseases into organic and medullary is not pathological, but nosological; that is, that when, like the ancients, we make the distinction of a nervous disease, (for example, of epilepsy into medullary and organic), we do not thereby mean to say, that it varies its pathological nature, but merely to point out its origin, as more or less accidental or natural, its course as more or less habitual or extraordinary, and its cure as more or less difficult. In fact, during the course of any nervous disease, and while its nature, whether hyperstenic, hypostenic, or irritative, has suffered no change, we observe, that, when medullary at first, it never fails soon to produce either inflammation, obstruction, or congestion, in the organs which it occupies;

and when organic at first, it does not allow a long time to pass without becoming medullary : hence it follows, that the neuroses, or nervous diseases, do not vary in nature, though they may exhibit different phenomena, nor though they may originate in different modes.

Taking it for certain, then, that, even when the neuroses are to be considered medullary, they preserve the same nature as inflammations, obstructions, or congestions, in the organs composing the nervous system, we consider them as a morbid form, singular, on account of the peculiar phenomena by which it is manifested, but quite common as to its mode of existence, that is, similar to every congestion, inflammation, and obstruction.

The morbid form which affects the nerves in nervous diseases being determined, the proximate cause may be clearly understood ; and therefore we say, 1. That when pain, stupor, convulsion, or error, exist as morbid states produced by any debilitating and present agent, they ought to be considered as phenomena of a congestion of humours, existing in the brain, the medullary pulp, the muscles, or other parts of the nervous system, and in this case alone the neuroses are hypostenic. 2. That, whether the same phenomena proceed from excitant or irritant causes, it is to be inferred that, by such causes, there is produced in the brain, the medullary pulp, the muscles, or other parts of the nervous system, either a congestion, an obstruction, or an inflammation, which is sup-

ported, as a simple morbid state, by the causes themselves, and which is of a nature either hyperstenic or irritative, according to that of the causes : and 3. That, when a nervous disease is established as a morbid process, whatever the cause may have been, and whatever may be the phenomena by which it is manifested, the phenomena must be considered as dependent upon a morbid process either congestive, inflammatory, or obstructive, of those organs, and of an invariably hyperstenic nature.

To demonstrate that nervous diseases, when established as processes, are invariably of an hyperstenic nature, the following arguments may suffice.

1. *Causes.* That the same causes may produce inflammation of the encephalon, apoplexy, asthma, or peripneumony, is what every one sees and knows. That nervous diseases may be transmuted into fever or inflammation, or into any other morbid form, and that any morbid form whatever may be transmuted into a nervous disease, without the disease changing its essential nature, every observant practitioner must have many times observed. To say, then, that nervous diseases arise only from debilitating causes, is to oppose all experience ; and thus, considering what is the etiology of nervous diseases, it becomes impossible not to believe, that their essential nature is the same as that of the other morbid forms, into which they are observed to be transmutable.

2. *Phenomena.* We grant the Brownonians, that pain, stupor, torpor, convulsion, or error, may be hyperstenic or hypostenic; but we cannot allow, that the different qualities of the pain, stupor, torpor, convulsion, or error, are proofs of the hypostenia or the hyperstenia. We grant them, that nervous diseases, produced and sustained by debilitating causes, are hypostenic, but we maintain, that such a nervous disease is dependent on its causes, and on the physiological state of the patient, is of simple phenomenology, and has all the other characteristics of a simple morbid state. But when a nervous disease is produced by exciting or irritating causes, and when, however produced, it becomes independent of the nature of the causes which produced it, and of the state of the physiological strength, and is of double phenomenology, we conclude, from analogy, whatever may be its phenomena, that they must be of a nature similar to that of any other morbid process.

3. *Juvantia and lædentia.* In the theoretical hypotheses of medicine a general principle is established, and, by this, a pretended explanation is given, of the phenomena and essence of all particular diseases: but the Italian new medical doctrine proceeds not in that manner. Arising immediately from facts, it must be guided, in every step, by practical induction; for which reason it cannot admit a general principle, unless it results from the analytic and minute consideration of particular facts.

Therefore irrefragable proof of the hypersthenic nature of every nervous disease, when established as a morbid process, will be given, when, in treating of the nervous diseases individually, we shall show, that, excepting the case of nervous diseases supported as morbid states by debilitating causes, persons affected with such diseases are obliged, more than any others, to observe a regimen the most abstinent, and to submit to the most rigid privation of the most common stimulants, which would prove to them not only very hurtful, but intolerable.

4. *Result of the Cure.* What are those cures of nervous maladies, which the Brownonians boast of having obtained by opium, castoreum and musk? The change of pain into stupor, or of torpor into convulsion, and often with injury to the patient!! And, if it may have occurred to any Brownonian to effect a radical cure of a nervous disease, shall it be said, that he has accomplished the cure, without employing the acrid relaxants or the metals, or the bath. Practice gained nothing from Brown in nervous diseases; but the monstrous commixture of such relaxants with stimulants in the method of cure.

The bath affords great refreshment to those affected with nervous diseases of whatever kind, and it may well be said to be the means that most certainly prove useful. We regard the bath as a relaxant agent, and such it was always considered in all the schools; since water manifestly

does not operate otherwise than by relaxing. But the Brownonians, admitting water to be a debilitating drink, and pretending that the bath is a superior corroborant, add, that, after the bath, it is proper to drink Malaga or Calabrian wine! &c. Who, in his senses, can believe this?

5. *Anatomy.* The best proof of the nature of nervous complaints is afforded by morbid anatomy, because it places before the eyes the facts of the morbid form, taken on by the organs composing the nervous system in their diseases. We constantly observe, in the dissection of the bodies of those who have died of nervous disorders, either the brain, the medullary nervous pulp, the ganglia, the nerves, or the muscles, sometimes tumid and full of blood, or sanguinolent lymph, which are marks of congestion; sometimes red, and hard, that is inflamed; sometimes *cineritious*, dry and hard, that is obstructed. From these observations, we most reasonably conclude that nervous diseases must have the same nature as the above morbid form, of which they are only the particular phenomena.

Diagnosis. To determine the nature of a nervous disease, it is necessary to know, whether it be medullary or organic, and, being organic, whether it be idiopathic or symptomatic. This is known, as we have stated, from the nature of the phenomena, and principally from those particular facts, on which we shall reason in the book on diseases of the nerves. What is of importance to

pathology is to know, when a nervous disease, produced by a debilitating cause, ought to be deemed a *morbid state* and hypostenic, and when it ought to be regarded as an established process, and hence deemed hyperstenic; but we shall say nothing of this, since it is necessary to form such a diagnosis by those same rules, which we said ought to be followed in the other morbid forms.

Prognosis. Nervous diseases are the most difficult of cure: some rapidly or instantaneously destroy life, and others remain, for the usual term of life, without hope of cure and without destroying the patient: few can be cured radically, few even admit of being somewhat alleviated.

If, in the diagnosis, the disease be found to be medullary, it must be regarded as more severe and pertinacious than the organic; as the nervous symptomatic diseases are to be considered more tractable and curable than the idiopathic. Those nervous diseases which involve the loss of reason, must be deemed more severe than those which produce stupor or torpor; and these more serious than those which produce convulsions and pain: but we shall see, that this last rule admits not a few exceptions.

A nervous disease, being one of the most terrible of morbid forms, it is almost always to be desired, and perhaps never to be feared, that it may be converted; and, therefore, it is always considered fortunate, when a nervous malady is converted into a fever, an inflammation, a congestion, an obstruc-

tion, or a profluvium, &c. and it is always considered unfortunate, when any of these diseases is converted into a nervous disease. With respect to the seat, there is always reason to apprehend bad consequences, when a nervous complaint occupying any of the other organs, translates itself to the brain; and, on the contrary, it is always to be desired, that, from occupying the brain, it should take up its residence in any other organ.

Specific Cure. If a nervous disease exist as a morbid state, we should quickly (if ever it be in our power) proceed to remove or to neutralise the cause, whether it be excitant, debilitant, or irritative, which is producing the disorder, because, if relief comes late, there is danger of finding the state already converted into a process, or rendered medullary. In nervous diseases, again, acknowledging a specific origin, whether scabious, syphilitic, rachitic, scrofulous, or herpetic, recourse should be had assiduously to mercury, sulphur, antimony, or iron, according to the specific cause, in order to prevent the disease becoming medullary, and thereby more difficult to remove, or altogether incurable.

Minorative Cure. It may be understood, from all that we have already said, that, in general, the cure of nervous diseases must be simply minorative. This will be required to be excitant in that case only where the disease exists as a simple *state*, produced and sustained by debilitating causes; but, in every other case, and in this too, when it has become a morbid *process*, the relaxant method

is required. Moreover we wish to impress upon our readers, that the use of relaxant agents in nervous complaints, ought to be made with still more circumspection, than in the cure of fever, inflammation, obstruction, and congestion: since it must be hurtful, if it should fall short in efficacy of what is required by the violence of the disease, as it would also be, if it were rendered more debilitant, than the physiological strength could bear.

Besides, we shall see in a little time, that we have in the materia medica, in the class of stimulants, and of relaxants, both *calmant* or soothing remedies, that is to say, such as ordinarily minorate or diminish pain and convulsion, and sometimes even change them into torpor or stupor, and *pungent* remedies, which ordinarily remove stupor and torpor, and also sometimes change them into pain and convulsion: for which reason, we must not omit to observe, that, in the hypostenic neuroses, although it be proper always to make use of excitants, it is requisite, however, to select the calmants or the pungents, according as the case may require; and that, in the hyperstenic or irritative nervous diseases, being obliged to make use of debilitants, we ought, in like manner, to select them from the calmants or pungents, as the predominant phenomena may demand.

Palliative Cure. In nervous diseases, more frequently than in others, it occurs to a physician to attempt the palliative cure with remedies contrary

to the radical; and especially when opium is used against pains or convulsions, however hyperstenic or irritative. On account of the constant narcotic power of this remedy, it is much more efficacious than hyosciamus, aconitum, and all the other relaxant narcotics. This practice began at a time, when the calmants were not distinguished into excitants and debilitants: nevertheless, in the ancient schools, the heating effect of opium was observed, and they did not fail to warn us that such a remedy could not be used, without much reserve and circumspection. We shall be content, that in the present day they may be used under the same rules; but, it being pretended, by most of the moderns, that nervous diseases are of an hypostenic nature, there is no limit set to the administration of the excitant narcotics in any convulsive nervous disease. Now, considering that the suspension of pain, and convulsions, effected by opium, in hyperstenic nervous diseases, is always hurtful to the root of the disease, and that the least mischief must be, that, after a time, the disease will be reproduced and more severe than ever, we must insist upon the observance of the rules laid down in the thirteenth chapter of the former book, in order that such a remedy may never be used, when it might endanger the state of the patient, nor, on the other hand, omitted, when it is the only means by which we can alleviate the sufferings of an unhappy fellow creature.

Prophylactic Cure. It may readily happen, that intermitting nervous maladies may be spurious, and not true periodicals ; and, at all events, it is necessary to employ the greatest care in making the diagnosis exactly. The bark and the excitant regimen, as they certainly cut short the period of the true nervous periodicals, are inefficacious or hurtful in the spurious.

Revulsives. Physicians employ, in nervous diseases, the revulsive remedies, which they use in fever, inflammation, &c. ; and we repeat, that such remedies, although they produce inflammations, yet may prove useful, not less, as capable of effecting an expulsion or an advantageous translation, but as relaxants; of which, in the materia medica, we shall speak at some length.

Shocks. When treating of nervous diseases, individually, we shall have occasion to notice certain accounts of cures having been obtained in some of these complaints; (which had resisted the most efficacious methods of cure), by means of some cause violently commoving the whole machine; and principally the nerves, for example, by a violent fright, or other violent passion ; by a change of all habits, and especially of climate ; by any remedy, whether excitant or debilitant, given so out of measure, that it has proved irritant, &c. &c.

We are willing to believe, that, in these cures, which certainly are beyond all doubt, the nervous diseases may have been medullary ; although we do

not understand how, from violent shocks, a change to health could be produced in the nervous pulp. From this ignorance we conclude, that the cure of nervous diseases by irritant means, shocks, &c. is never to be imitated, however fortunate an example of it may be adduced; as long as the malady has not shown itself intractable by every ordinary means of cure, and if the remedy, which is proposed, be not incapable of proving deadly, either because it may be, of its own nature, innocent, or capable of being rendered such by prudently administering it. To the head of irritating agents we shall, in the materia medica, refer galvanism, magnetism, and electricity; and thus we shall not only explain, in what manner the cure is produced by these agents in nervous diseases, but also why such means sometimes have succeeded most happily without our knowing the reason, at other times not, and why they have often, when not practised with discretion, ended most unfortunately.

Narcotics. The affection termed *narcosis*, is a particular species of nervous affection produced by certain vegetable agents, which, in the materia medica, bear the title of narcotics. It exists as a morbid state, whilst the action of these agents lasts; and, if it does not convert itself into a morbid process, vanishes when the agent, that may have produced it, has ceased to operate. The facts relative to the narcotics, and to the narcoses, are these.

1. In narcosis there is manifested, variably, either joy, or fury, or sadness, or anger, or extasy, or delirium, or sleep, or coma, or lethargy; but, invariably, a forgetfulness of the ills of life, and minoration or cessation of pain. 2. The narcotics, applied topically to nerves or muscles, reduce pain; when they do not prove irritant, they also produce torpor, and convert convulsions into torpor; and, when their power is generally diffused over the system, they produce also narcosis.

These facts only being known to the ancient schools, they arranged all the narcotics under one common class, without distinction; yet they knew that some of them were calefacient, and others refrigerant: but it is at length determined, by the Italian new medical doctrine, that the narcotics, although they agree in producing narcosis, yet differ most essentially in operation, since the ancient calefacient narcotics, as wine, opium, and some of the austere bitters, are stimulants, and are commonly used as such, among other things destined to support life; and cynoglossa, hyocyamus, aconitum, stramonium, belladonna, and many other acrid bitters, are relaxants, and often used, less as narcotics, than as resolvents, deobstruents, &c.

This shows that narcosis, as we have said of all the nervous phenomena, may arise either in hyperstenia or in hypostenia. If it were true that vinegar is an antidote to all narcotics, both stimulant and relaxant, it must depend upon the fact,

that the narcotic principle of vegetables is completely and specifically different from their stimulant or relaxant principles. If, then, (as is most probable) vinegar, in alleviating narcosis, affords no satisfactory proof that it is truly a specific antidote to the narcotics; or, if it be an antidote for the stimulants, but not for the relaxants, it may be said, that narcosis depends upon the special mode of operation of the narcotics, and not upon their degree; and that we are ignorant how they, and how any phenomenon and any nervous disease, may (as we have already said) be produced by different, and even by contrary agents. Let us, in conclusion, recollect, that such ambiguity does not at all affect the practice of the present day; since we have already established, that, in the treatment of painful and convulsive diseases, we ought to use the narcotics, and that it is always prudent to avoid them in cases of torpor or of stupor; while, in selecting them attentively, we avail ourselves of either stimulants or relaxants, according to the nature of the disease; excepting only in those cases, where, although we are certain of the effect of opium as a stimulant narcotic, it is still desirable and possible to use it palliatively, even in hypersthenic diseases.

Nervines. Except the narcotics, which have a special action on the nerves, all other medicines, which in the materia medica have the title of nervine, do not operate on the nerves otherwise than in their ordinary manner, either as stimulants or relaxants. But to understand how the different

schools, ancient and modern, have classed the so-called nervine medicines, we subjoin the following notes.

1. The austere bitter vegetable substances, and the aromatics, were considered as corroborants and stimulants; and if, from their use, phenomena of stupor or of torpor came on, they were termed *sedatives* or *carminatives*, being persuaded that they had quieted the nervous spirits, that had been in a state of agitation. But if they produced pain or convulsions, that is, if they proved irritant, they were called *stimulant*, pungent, or convellant agents; it being supposed that they put the nervous spirits in agitation. The moderns, observing the particular effect of these agents on the nerves to be variable, but that it was constant and common to all of them to operate by stimulating, have concluded they ought to be classed with opium, and wine, which are narcotics, under the common title of *stimulants*, thereby meaning, generally, excitants, or what we call vivificants.

2. The acids, the earths, the metals, the alkalis, and all their salts, have always been deemed stimulants in the sense of irritants; because they never can act directly as narcotics, and because, as irritants, they in the first place shew this effect by agitating the nerves. Notwithstanding this, the ancient and modern schools have not ceased to make use of them, although with every precaution, in painful and convulsive hypersthenic diseases; thus Hombergius called the boracic acid, *Sal Sedativus*.

3. The acrid bitter vegetables are also to be distinguished into irritant and sedative ; the first, as squill, aloë, jalap, &c. are not narcotics ; and the second, as the hyocyamus, cicuta, cynoglossa, are narcotics. In the present day, all these agents are classed under the common title of contra-stimulants, because they operate by solving, loosening, or relaxing.

4. Blood-letting, water, mucilaginous liquids, oils, and saccharine substances, have always been regarded as relaxants, as they really are, and have accordingly been employed in all nervous diseases, whatever be the phenomena by which these appear, provided that the debilitating method be suitable.

CHAPTER VI.

OF BAD HABIT OF BODY.

We consider as a bad habit of body, any alteration whatever of that faculty of the living machine by which it forms and repairs it's own parts, whereby the substance of the solids, and of the humors of

the body, are visibly changed in quantity and quality, from what they were in health.

Now, it will be made clearly to appear in this chapter, what is the proper distinction between the ancient and modern doctrines of medicine. In respect to theory, the ancients deemed physical and chemical alterations of the substance of the living body to be the proximate causes of diseases; so that the disciples of the ancient schools made themselves to be called *solidists* or *humoralists*, and thence either *physical*, *mechanical*, or *chemical*, according as they considered such alterations to be in the physical, chemical, or mechanical properties. The moderns, considering such changes to be nothing else than the effects of the altered state of the assimilating power, and that power or faculty to be one of the manifestations peculiar to life, with more wise foresight, reckon the alterations of the vital force the proximate causes of diseases, and the physical, chemical, and mechanical changes of the solids and fluids always as effects of the diseases themselves; to which adding, that the vital force, considered abstractly as that faculty which makes the living body such as it is, and sustains it while it lives, is resident, as it becomes us to believe, neither exclusively in all the solids, nor in all the fluids, but in the union of both, composing the body of the living being. Hence the distinction of medicine into solidist and humoralist falls to the ground, as a useless and false hypothesis. In respect to practice, the ancients had no slight advantage over the mo-

derms ; for this reason, that the alterations of the substance of the living body, being distinguished visibly into those of simple *quantity*, excessive or deficient; and those of *quality*, such as when particular characters were acquired, or as when new bodies or substances were generated, the ancient practice was exempt from that defect of the modern, of not knowing the difference in quality which distinguishes diseases from each other, and from health.

Considering it to be of as much importance to observe, that the alterations of substances may relate to quantity, as well as to quality; as to admit in the abstract, that the vital power may change both in degree and in mode, we have, in the foregoing book, determined precisely the distinction between gradal and modal diseases. By this labour, we find ourselves, as we shall soon see, in the favourable conjuncture of being able to avoid the errors of the moderns, no less than those of the ancients, in giving a pathological explanation of a bad habit of body.

PLETHORA AND CENEAGIA.

Phenomenology. In discussing the changes as to quantity, to which the substance of the solids and fluids is liable in a bad habit of body, we distinguish *plethora*, which signifies redundance, from *ceneagia*, which signifies a loss or diminution of the substance.

In plethora, the body appears very full, consistent, turgid, and of a florid colour; the blood abounds in crassamentum, and is very plastic; the pulse is hard and full; the veins swelled and elastic; the secondary fluids very thick and substantial; there is a sense of heaviness in the person, and tendency to sleep; inability to sustain much exercise or heat; the loss of fluids, even in large quantities, borne with ease; and the strength is readily recovered after moderate evacuations, particularly of blood.

The contrary phenomena indicate ceneagia; the body is flaccid, pallid, and livid; the blood very serous, the veins small and soft; the pulse small and weak; the secondary fluids very watery and crude; debility; a desire of warmth, and of frequent refreshment; the loss of any blood or other fluids, and the use of relaxants, borne with difficulty.

Pathological etiology. Plethora and ceneagia may exist as simple morbid states, or as elements of a morbid process, or of a disease of quality; and yet the remote causes of the same must be distinguished into natural, non-natural, and morbid.

Females, from puberty to the first stage of old age, are naturally plethoric, and principally during menstruation, pregnancy, labour, and lactation: puberty, in both sexes, naturally produces plethora. Persons of a sanguine temperament, or choleric habit, are most disposed to plethora, and those of a phlegmatic or melancholic temperament to cene-

agia. Moreover, there are some particular idiosyncrasies in which the patients cannot safely indulge in good living, unless they lose blood from time to time, and this they frequently do by epistaxis.

The non-natural causes of plethora are abundance of animal food; the use of red austere wines, little exercise, much sleep, indolence of mind, the air of the country, mild seasons, good digestion, the omission of natural or habitual losses of blood. The non-natural causes of ceneagia must be understood to be, a tenor of life and use of things the reverse of the above; the loss of blood, and, finally, convalescence from acute diseases, which, though perfectly resolved, have left behind them the usual physiological debility.

Diseases necessarily alter the quality of substances; and therefore the quantity cannot remain unaltered. According as the constitution of the patient is naturally more disposed to plethora or to ceneagia, and according as the occasional causes have been excitant or debilitant, the disease occurs with one or the other kind of habit. Besides which it is to be observed, that in acute diseases the same signs indicate in the beginning plethora, and that which we call increased physiological vigor; and yet, as soon as the suffering, the fasting, the relaxant remedies, and the abundant excretions, bring on physiological debility, the phenomena of plethora are changed into those of the ceneagia. Lastly, let us observe, there are some diseases, as the hæmorrhoidal, which dispose to plethora, and others, as scrofula, which induce ceneagia.

To determine precisely the proximate cause of plethora and of ceneagia, we must necessarily distinguish the case in which these exist as simple states of disease, from that in which they are phenomena and effects of a morbid process. As a simple morbid state, we conceive plethora to be an hyperstenia, and ceneagia an hypostenia; but when they are the effects of a morbid process, both the one and the other ought to be considered as products of the nature of the process itself; that is, constantly hyperstenic. And as morbid ceneagia, or a defect in the quantity of substance, cannot otherwise be repaired, as the ancients thought, than by correcting the quantity of substance itself; so we, in other terms, affirm, in opposition to the Brownonians, that the ceneagia, or the physiological debility produced by a disease of process, ought not to be combatted by excitants, but by those relaxant means, which are fit to resolve that process which is hostile to the good and full formation of substance, and, hence, to due nutrition.

Diagnosis. The ancient schools distinguished plethora, and ceneagia, as they related to *vessels* and to the *strength*; into *general*, viz. extending to all the machine, and *particular*, viz. limited to any one or more organs only; into *common*, that is, of all the humours, and *singular*, that is, only of the blood, the lymph, or the bile, &c. Such distinctions shall be omitted by us, as having been produced more from the hypothesis of the ancient schools of humoralists, than from experience, reserving

to ourselves, on the other hand, the liberty of explaining what little truth they contain, when we shall see it good in reference to practice.

The only distinction, which we think it essential to make, for the sake of practice, is that whereby plethora and ceneagia are regarded as absolute or relative; *absolute*, when each is considered solely by itself; and *relative*, when the one is valued in comparison with the other. This is clearly shown by the following examples: 1. A man in the highest state of plethora finds himself at once hungry, tired, and sad; the phenomena of ceneagia are observed quickly to arise, not indeed absolute, that is, such as would truly be his physiological debility, but relative, as compared to the extreme plethora in which he habitually lives. 2. Let there be another person in a state of absolute ceneagia, either from having lost much blood, or from having suffered great and long continued privations, or from convalescence from any acute disease, or from the presence of any consumptive disease; it is possible, either from the use of strong excitants, or from the recurrence of the period of menstruation, or from the hæmorrhoidal plenitude, for the phenomena of plethora to arise; this will never appear absolute, but such as may take place relatively to the predominant ceneagia.

Prognosis. Plethora and ceneagia of slight degree, admit of a person living somewhat short of enjoyment, but often without any bad consequence; since life is never more happy, than when temperance preserves the body in its natural fulness. When,

again, these morbid forms happen to be great in degree, they may operate as predisponent causes of any morbid process, whatever, febrile, inflammatory, obstructive, congestive; or nervous. Hippocrates, in the third aphorism of the first book, has declared the greatest plethora to be very dangerous. The divine comedy represents the horrid aspect of death, when it proceeds from hunger.

Specific Cure. Moderation, in the use of the things which support life, is the only specific means by which the natural fulness is preserved, plethora and ceneagia cured, and diseases avoided.

When plethora or ceneagia is natural or habitual, it is proper, besides sobriety, to order some restriction in the use of the things which act as causes in producing or increasing the predominant bad habit; and, in doing this, we must manage so that the bad habit be left off, the more gradually in proportion as it is of long standing. When, again; either plethora or ceneagia is the effect of any morbid process, there is no other cure for it, than the direct one of removing the disease which produces it.

Minorative Cure. Blood letting, fasting, and the relaxant agents, although they operate specifically in removing the bad consequences of excessive plethora; yet they prove only simple minoratives of the plethoric bad habit, insomuch that the plethora is re-produced, if the things which used to produce it be still continued in use. The same may be said of the excitants employed against ceneagia.

Palliative Cure. Subtractions and additions made on the instant are useful to palliate, or alleviate the symptoms of plethora and of ceneagia. Now, the only case in which the palliative cure is of an opposite nature to the radical cure of a bad habit of body, is that in which excessive ceneagia requires stimulants, whilst there is a morbid process that may suffer harm from the use of them. The practical rules, according to which it is proper in such a case at once to preserve, as much as possible, the physiological strength, and to dissolve the morbid process, were laid down in the 12th and 13th chapters of the foregoing book.

Prophylactic Cure. Galen, although he may have been more than any other physician a friend to blood letting, condemns the bad custom of those, who, leading a life without sobriety, were accustomed to prevent the consequences of plethora by frequent bleedings; nevertheless, in subjects naturally disposed to plethora, and tenacious of those habits which lead to its production, it becomes necessary, from time to time, to prevent bad consequences by bleeding.

Brown represented man as subject to no other than continual causes of debility. The ancients, on the contrary, by considering how few things are necessary to support natural life, wisely reputed that citizen miserable, who was unable to support want, in other terms, the Brownonian debility; for which reason, considering the ceneagia always as a morbid state, accidental and transitory, the

ancients admitted only two bad habits of body, to wit, plethora, and cacochymia. Although we have admitted ceneagia to be a bad morbid habit, yet we agree with the ancients, that there is no need of a prophylactic cure against it; since the common use of the non-naturals perhaps never debilitates so that they could produce it; and, besides, in proportion as it is easy for a man to be led to excess by his inclination, is it difficult for him to sustain privations to the extent of producing ceneagia.

CACOCHYMIA.

Phenomenology. That alteration of the quality of the substance of the solids and fluids, called by the ancients *cacochymy*, proceeds, either from a disproportion of the elements of the substances themselves, such that the solid tissues and the fluids, although they are of a morbid quality, nevertheless preserve completely their ordinary appearance; or from a new proportion and composition of the elements themselves; so that there arise new substances in disease, which never exist in health. For instance; in pleurisy the blood, although it appears to have qualities different from health, does not lose the aspect of blood; but pus, degenerate mucus, coagulated serum, the buffy coat, urinary calculi, ossifications, adhesions, false membranes, schirrus; and other parasite growths, are substances never proper to the state of health.

These facts, although they justify the admitting cacochymia to exist in diseases of quality; yet we must expect, that natural philosophy and chemistry, when applied to medicine, shall determine what are true cacochymies, and disclose the true processes by which they are produced.

Pathological etiology. The ancients distinguished two species of cacochymy; the first, that which comes from disorder in the use of common things, called non-naturals, and the other, that which arises from the introduction of any noxious matter into the body, by contagion or otherwise. Now, the distinction thus made, is the same, precisely, by which, in the second chapter of the first book, we distinguished the diseases of mode into diathestic and adiathestic: wherefore, in the sequel, we shall see, how the diseases, by us called diathestic, receive their morbid quality from the ordinary non-natural causes; and the adiathestic, from extraneous causes introduced into the body.

So far it is easy to review the points of resemblance which exist between the Italian new medical doctrine, as modified by us, and that of the ancients

1. In the morbid states, or simple diseases of grade, there is plethora when the causes are stimulant, and cœneagia when the causes are debilitant, without any cacochymia.
2. In simple irritative diseases, not degenerated into morbid processes, there is no cacochymia.
3. In diathestic morbid processes, that is, diseases produced by whatever cause, excitant, de-

bilitant, or irritative, but ordinarily non-naturals; besides plethora or ceneagia; there is intrinsic caco-chymia, that is, caco-chymia proceeding from an intrinsic change of quality of the assimilating faculty. 4. In adiathestic diseases of process, besides plethora or ceneagia, there is the extraneous caco-chymia, that is, caco-chymia proceeding from that morbid matter received within the body from without, which alters the vital power in mode and in degree.

But, as we advance further, the resemblance between our modern and the ancient humoralist pathology is to be seen, if we keep in mind the value of the obsolete term *morbific humor*; since this, by serving as a general formula to indicate the proximate cause of all morbid forms, febrile, inflammatory, obstructive, congestive, nervous, &c. signifies what, in the modern schools, the word *phlogosis* imports, employed in like manner as a general formula to indicate the essence of the morbid form itself. And therefore we shall see, in due time, how the dyscrasia lymphatica, biliosa, sanguinea, and atrabiliosa of the ancients correspond to phlogoses diffused in the arteries or the veins, or in the lymphatics or in the nerves; and the terms *hot humor*, *slow humor*, *fixed humor*, &c. we shall find evidently to correspond to these of the moderns, *phlogosis calida*, *lenta*, *fixa*, *vagans*, &c. From this it seems, that if, in reading the classical works of the humoralists, we change the word *humor* for that of *phlogosis*, it will almost appear that the ancient pathology is the modern,

and the modern will seem as old as medicine itself; for example; in the gout, the ancients admitted a *gouty humor*, latent and spreading in the body, for the most part residing in the lymph, which, by manifesting itself at given times, produced the gout regular or irregular: we say, that in the gout there is a change of quality in the vital power, which produces a continual process of inflammation (*phlogosis*), which, for the most part, is diffused in the lymphatics, and here it is hidden, until, kindled at certain times, it is manifested by that inflammation, regular or irregular, acute or chronic, in which consists the gout. Thus, although the appearance of the gout may vary; although either plethora or ceneagia may appear, and although the physiological state of the patient may be hypostenic or hyperstenic, the ancients and we both regard it as firmly established, that the proximate cause is the phlogistic morbid form, and therefore that the nature of the gout is always the same, and unchangeable, however it may vary in degree.

In respect, again, to the proximate cause of cacoehymy, our modern pathological hypothesis is entirely opposed to that of the ancients; because they believed, that external causes, in producing it, and remedies in correcting it, operated immediately on the substances, communicating to them the injurious or beneficial properties, physical and chemical, with which they are endowed: but we are of opinion, that external agents do not operate otherwise than by changing, in a manner unknown,

the vital power, both in degree and in mode, and that cacochymia is always an effect, and never a cause of disease.

The advantage which the modern pathology has over the ancient is this, that, among the ancients, they believed they could discover the noxious power of morbid causes, and the medicinal agency of remedies, by considering the physical and chemical properties of these agents; whereas, among the moderns, it is deemed impossible to determine, by any hypothesis, the noxious or salutary properties of agents, but by experiment only.

Diagnosis. The ancients had occasion to distinguish the particular cacochymies of particular diseases, to know the specific quality of every disease, in order to distinguish it from every other, and to give in every cacochymy remedies of physical and chemical properties contrary to those which they believed the morbid substance to possess. They studied the particular characters of the scrofulous cacochymy, in order to distinguish scrofula from every other disease, and, because they supposed it to consist in a density of the lymph, they thought the proper remedies to be given were such as might cut or split. We shall, not less than the ancients, take care to determine the special nature of the morbid cacochymy, for the exact diagnosis of each disease, after we shall have established that every one is different in quality from all the rest; but, as far as regards the cure, we have no necessity for physical and chemical hypotheses for determining

both the nature of the cachochymy, and the power of the remedy.

Prognosis. Although, according to our theory, caco-chymy be an effect, and not a cause of diseases, that principle is always guaranteed, by which the degree of malignity of a diseases is calculated from the degree of degeneration of the substance; and therefore, by changing terms only, in treating of particular diseases, the prognostics, which the ancients collected from the greater or less dyscrasia of the humors, shall be rendered by us in the same manner.

Cure. From the considerations already explained on cachochymy, it will readily appear how easily, in the cure of diseases, we can avoid certain errors of the ancients by approaching to the moderns, and refute all the errors of the moderns by following the ancients. In this place we shall explain only the following principal points. 1. As by the ancients every remedy corrective of the morbid caco-chymy was presumed to act specifically, so they admitted a greater number of specifics than was proper. We, admitting specifics not by hypothesis but by experience only, shall preserve very few, and such only as shew themselves to be so by the proofs of fact assigned and required in Chapter XI of the first book. 2. From conceding to remedies a corrective power by hypothesis, it is not repugnant to believe, that, to some, it might seem meet to order a stimulant as a corrective even in an inflammatory disease. In fact, some believed, to-

wards the latter period of the humoral system of medicine, that the bark possessed a corrective power against the bile, and was an anti-purulent and antiseptic; and some of our old physicians, still followers of such ideas, in support of the Brownians, do not cease to order it in continued bilious fever, in erysipelas, in suppuration, and in every gangrene, turning away their eyes from seeing that the physiological state of the patient incapacitates him from bearing such a remedy, that the symptoms of the disease increase, and that the patient is becoming the victim of their obstinacy. What pangs would not the unsophisticated ancient Hippocratists have felt for such errors?

3. On the other hand, the moderns, from not recognizing the ancient doctrine of cacochymy, have denied the difference of the quality of diseases, and have lost every idea, both of the complication of the various diseases, and of the incommutable nature of each and every one of them. Further, from considering all remedies to be equally excitants, they have confused still more every thing of practical therapeutics; hence, the varying of the curative method, according as the physiological strength of the patient varies; hence, the commixture of opposite remedies in every cure; and, hence, the so many other fooleries, of which (to lessen our disgust) we refer the discussion to other places.

4. Finally, being able to distinguish the radical cure into specific and minorative; and the prophylactic and palliative cures into analagous, and

contrary to the radical, we shall see how, with very little trouble, we can return to that ancient and grand therapeutic system, which experience has shewn to be useful in all times.

CHAPTER VII.

OF MORBID ALTERATIONS OF THE TEMPERATURE,
OF THE EXCRETIONS, AND THE COLOUR
OF THE BODY.

Phenomenology. The developement of heat, the flow of the excretions, and the appearances of colour, proceed so much together, that we cannot better discuss their several alterations than unitedly. Now, we call *heat*, that sensation which proceeds from the elevation of the temperature; and *cold*, the reverse, which proceeds from lowering it. Flux, or profluvium, is an increase, and suppression, or dryness, a lessening or deficiency of one or more, or all the excretions. *Redness* is the fiery colour; and *paleness*, or *lividness*, any dead colour. All the possible combinations, according to which the temperature, the excretions, and the colour, may

be altered in diseases, are the following:—

1. *Coldness, dryness, and paleness.* In this first combination we find the skin dry, the mouth and throat parched with thirst, the eyes glistening, the urine scanty, the belly bound, shiverings from cold, or tremors, coldness of the extremities, lividness of the nails, lips, eyes, &c.

The Brownonians considered these phenomena as signs, more than certain, of debility. We admit, that most of the hypostenic morbid states may shew such a combination of symptoms, as fear, sadness, famine, extreme cold, poisoning when the effect of relaxants, ceneagia, and physiological debility of every other kind; but yet we insist, that it would be a very pernicious error to believe, that the same phenomena might not proceed from irritative, and even from hyperstenic diseases; rather let us remember, that coldness, dryness, and paleness, conjoined with a very small, slender, and slow pulse, truly demonstrate hypostenia; but when it happens that these symptoms accompany an equally small, but restrained, bound, tense, and quick pulse, they must be considered as the effects of an excess of hyperstenia, or of irritation. And, to understand the reason of this, it is to be presumed, that when, from the violence of the hyperstenia or irritation, the action of the exhalents, particularly, is increased beyond measure, the great abundance of transpirable matter, assuming the ærial form, absorbing caloric in more abundance than it is developed, occasions a deficiency of

it, and thence gives rise to coolness, pallidness, scarcity of the other excretions, the dryness of the surface, compression, tension, and velocity of the pulse. But, whether such a theory, (rather of ancient than modern origin,) as we have chosen to adopt in all this chapter, be true or not true, it is certain, that the phenomena in question are every day observed in the beginning of the paroxysms of fevers, in the first reversions of the most acute inflammations, in nervous and other diseases, whose nature is shewn, by irrefragable proofs, to be hyperstenic. And the same phenomena are observed in the irritative and hyperstenic morbid states, when the causes operate rather violently ; as, for example, from excess in the administration of aromatics, alcohol, or opium, and from worms, shocks, or other irritative causes. And, lastly, it is necessary to reflect, that in those diseases which produce great physiological debility, as dropsy, consumption, and the like, although the coldness, dryness, and paleness should appear to be effects, not immediately of the disease, but of the physiological debility ; nevertheless, for the reasons explained in the former book, the nature of the morbid process ought to be regarded as hyperstenic, as much as any other ever was.

2. *Heat, dryness, and redness.* In this second combination, we observe the skin dry and parched ; the mouth and the throat dry, and the breath burning ; the tongue, at least on the borders, hot, red, and dry ; the eyes lucid and reddish ; the

urine scanty, thick, and high-coloured; the mucous membranes parched, or covered with a thickened coagulated mucus; the eye-lids, cheeks, lips, &c. burning.

The Brownonians admit all these phenomena to be signs of increased vital action; except when they appear in those diseases, which, according to their hypothesis, they maintain to be hypostenic, although they should be fevers, or inflammations, or others, when as they give us to understand, notwithstanding the actions are thus increased, they arise from a *fund* of debility, (a word without meaning). Resting on the simple observation of facts, we hold it as established, that heat, redness, and dryness, are always phenomena of hyperstenia, or of irritation; and that, when they come after the operation of relaxant agents, it is a certain sign that these have proved irritative, or have already produced a morbid process, which, of course, is truly hyperstenic. Let us only observe, that the foregoing combination of phenomena, paleness, dryness, and coldness, when they arise from hyperstenia or irritation, shews these to have acted much more violently, than when they produce the present combination of redness, dryness, and heat. In fact, paleness and coldness are observed on the first impetuous access, and at the most urgent period of diseases; whereas redness and heat are observed in the ordinary stages. Moreover, when the heat and redness are conjoined with a full pulse, but not very tense nor very frequent, they are to be

regarded as signs of the favourable and regular course of the disease.

3. *Heat, flux, and redness.* In this third combination, we have the phenomena aforesaid of heat and redness, but conjoined with the abundant flux of some one or more excretions, as of sweat, tears, mucus, urine, fæces, &c.

The Brownonians, if they sometimes cannot do less than admit a flux to be hyperstenic, so, as physiological debility is quickly induced by it, it follows without difficulty, that the disease is also judged by them to be hypostenic. Having established, and demonstrated the independence of the pathological nature of morbid processes of the physiological state of the patient, we consider fluxes, joined to the phenomena of redness and of heat, to be effects always of irritation and of hyperstenia; and this as more violent, than hyperstenia and irritation when accompanied with dryness. And, indeed, it is to be presumed, that, in this third combination, from the irritative or hyperstenic action of the excreting vessels being unduly increased, the excrementitious mass becoming greater than can be converted into the form of vapour by the quantity of caloric, a portion of it must necessarily flow in the form of liquid, and that from this arise the fluxes. For this reason, the hyperstenia and the irritation ought to be considered as more severe and violent, in proportion as the quantity of the fluid discharged is great, as the quality of it is degenerated, as the pulse is bound, tense and

quick, and as the concomitant physiological debility is great.

Coldness, flux, and lividness. In this combination, with the phenomena of coldness and lividness of body, rather more intense than those described in the first combination, is seen conjoined a flux of one or more, or of all the excretions, in quality always bad, as this is the worst combination, and one which often goes on to gangrene and death. Who could hope to be able to persuade a Brownian that this combination of phenomena is not always an effect of their most *marked* hypostenia? Nevertheless, reason free from prejudice, and experience oblige us to believe, that coldness and lividness joined to a flux, may arise from hypostenic, hyperstenic, or irritative causes, in like manner as when the same qualities are joined to dryness; because, when the morbid action of the excreting vessels unduly increased, produces an enormous mass of excrementitious matter; that portion, which escapes in the form of gas, produces the coldness and the paleness, and the other large portion, which remains in the form of liquid, produces the flux; and therefore such evil combinations are observed under the immediate operation of agents, whether excitant, debilitant or irritative, when they act violently, as in cases of poisoning; and in all morbid processes, when they run to a fatal termination.

5. *Coldness, flux, and natural colour.* If ever a disease has been accompanied with dryness, and

afterwards has undergone resolution, then a flux of excretions comes on, and frequently from those very organs which have been dry ; and when a disease has completed its course, if that disease has produced any flux, that flux either abates, and by degrees terminates without more ado, or, whilst this stops, there commences some other flux from those passages which, during the disease, have remained parched and dry. The ancients, very justly, termed *symptomatic*, that is, elements of the disease, the aforesaid fluxes which arise during its violence ; and *critical*, *resolutive*, or *judicatory*, those other fluxes, which take place at the time of the resolution of the disease.

The reason why the resolution of a disease is, for the most part, accompanied with a flux, is not revealed by the various medical theories. The Brownonians have always forgotten to assign any reason why those morbid processes, which they maintain to be hypostenic, do not resolve themselves otherwise than by fluxes, after which the pathological debility, or prostration of strength disappears, and the physiological debility arrives at its height. Must not the motive for this scandalous silence be the too great clearness with which this fact proves, that the nature of morbid processes is never hypostenic ? According to the theory already explained, we can easily understand, how, in the resolution of morbid processes, from the diminution of the developement of heat, often before the abatement of the violent action of the

excreting vessels, all that portion of the excrementitious mass, which cannot be evaporated in an invisible form, must run off in form of liquid, and hence appears the flux. Keeping this in remembrance, we shall see, in the proper place, how many most precious maxims of the ancients on the nature of fluxes, so ill treated of by the moderns, we can make use of in practice, how much soever we may differ in the said theory from the ancients themselves. According to them, the resolute or critical fluxes were regarded as expulsions of morbid matter, hence they were considered as causes of the resolution of diseases, and as such were sometimes inopportunately excited; but we, considering them as simple phenomena, or rather as effects of the resolution itself, shall attempt every means to produce resolution of the morbid process, leaving to nature herself, and to the peculiar character of the disease, to manifest it by a flux or not.

Pathological etiology. Alterations of the temperature, excretions, and colour, are, as every one sees, not quite morbid processes, but effects and phenomena of every disease, whether of state or of process, and of whatever form, whether febrile, congestive, inflammatory, obstructive, or nervous. Hence the pathological etiology of these alterations, in every case, is the same as that which is proper to the disease itself, or which the diagnosis discloses to be the cause. Let us here only observe, in addition to what we have said above on the phenomenology. 1. That those things among

the non-naturals, which are debilitating, and the relaxant agents, by producing a general or particular congestion, as a morbid hypostenic state, produce coldness and paleness, either with suppression or increase of one or more excretions; and, 2. That the same things, if they have proved irritant, or have already produced a disease of process, and all those things, which are naturally irritant or excitant, may cause morbid processes, which, however produced, may assume any one of the above combinations, inasmuch as coldness and paleness, or heat and redness, may be conjoined, either with suppression or with increased flow of excretions.

Diagnosis. Let us observe, that in diseases of increased flow and of suppression of excretions, besides its being necessary to determine, whether the disease exist as a state, or as a morbid process, a thing most important in practice is to know, what morbid form the organ has taken, in which the flow or suppression has taken place, whether it be fever, inflammation, nervous, &c. in order to render the prognosis more exact, and to ascertain the most suitable cure. For this end, it will be useful to consider the phenomena proper to each morbid form, as applicable to the organ chiefly affected, as well as to observe the quality, quantity, and manner, in which these excretions are expelled, which are principally abundant or scarce.

Prognosis. Heat and redness indicate less violence in a disease, than paleness and coldness;

in like manner, an increased flow indicates greater violence in a disease than a suppression of the excretions; and in case of a flow, when the excretions are discharged scantily, and with great pain, so much the worse; and when the quality of the discharges is vitiated, the case is still worse.

The ancients laid great stress on the duty of distinguishing the symptomatic from the critical fluxes. A flux ought to be deemed critical, 1. When it occurs at a seasonable time, that is to say; on such day as, from ancient experience, it may be presumed that the disease has completed its necessary course; more especially when a nervous agitation having occurred in the preceding night, may have announced a crisis as at hand. 2. When, with the flow of the excretions, the flesh becomes morbid and the pulse soft, and undulating, 3. When the flux proceeds from the proper organs, that is, either from those which have been most affected by the morbid form, or from another less important, and from which the excretions may more easily be discharged. 4. When the quantity of the excretions is abundant, and the quality, however vitiated at first, improving in the progress of the flux. 5. When the discharge is sudden and easy. 6. When it is observed that the body easily bears the loss of substance discharged by the flux. A flux is truly resolute of a disease, when the natural freshness and colour of the flesh re-appears, when the quietness of the pulse is restored, when an alleviation and reduction of the pathological habit takes place; when

the symptoms proper to the disease disappear, and especially those affecting the organ the most concerned in the disease, and, finally, when the most simple physiological debility appears, with an appetite for the proper restoratives.

Refrigerants and Calefacients. Those things among the non-naturals which are debilitant, and the relaxant agents, naturally lower the temperature, and diminish the redness of colour. But yet there are two cases in which they must prove heating. 1. When they either act as irritants, or produce an hyperstenic morbid process; and, 2. When operating on a body which is livid and cold, from an hyperstenic disease, they allow heat to succeed to the coldness, in like manner as redness does to lividness.

Those things among the non-naturals which are excitant, and the vivificant agents, naturally prove heating; but, however, by operating too violently, it will be easily understood, from what we before observed, that they may produce coldness united to lividness.

Aperients and astringents. Those things among the non-naturals which are debilitant, and the relaxant agents, by producing paleness and coldness, may cause either a suppression or an increased flow of excretions; and therefore the relaxant method, when opportunely employed in the hypersthenia, proves effectual, when these symptoms are accompanied with a suppression; and the astringent method, when with an increased flow of excretions.

Those things among the non-naturals that are astringent, and all the vivificant agents, generally prove astringents, and must operate very violently, in order to have the effect of aperients. But when they are opportunely employed in the hyposteniæ, they restrain fluxes, and overcome hypostenic suppressions. Water, from being a relaxant, proves aperient, or astringent, in like manner as we have said of all the relaxants. Moreover it is to be considered, that water, from forming the greater portion of our fluids, and especially of the excretions, materially increases the abundance of the excretions, and the fluidity of the humors. To express this power of water, the ancients deservedly added to the title of relaxant that of *diluent*.

From the peculiar nature of the living process in each organ, and of the mode of operating of every agent, it appears, that when remedies become aperient, not constantly but frequently, some prove cathartic, others diuretic, others diaphoretic, &c. And, therefore, even at the time of the most furious Brownonian delirium, although it was believed that the vital process could not suffer any change but of degree, physicians did not despise the practice of selecting, in diseases of suppression, those aperient remedies, which, from ancient experience, were supposed capable of producing that particular kind of flux, or discharge, that appeared most required, for producing the resolution of the disease.

From a like peculiarity in their mode of operating, appears to depend the particular power of the astringents ; since those agents are vivificants or relaxants, which operate on the exhalents, so as to increase the quantity of the transpiration in the aërial form, and in rendering the surface moist, necessarily have an effect in rendering the other excrementitious liquids scanty and thick. 1. In fact, if such constrictive agents are given in small doses, and diffused in much water, they will also be seen to prove excernant, and especially diaphoretic. And, in truth, such are the visible effects both of the astringent vivificants, such as the austere bitter, vegetable substances, opium, red-wine, &c. as also of the astringent relaxants, such as iron; alum, &c.

Specific Cure. Avoiding the causes excitant, debilitant, or irritant, in the morbid states ; sulphur and mercury, in scabies ; mercury, in syphilis ; sarsaparilla and antimony, in herpes ; iron, in scrophula and ricketts, by operating specifically, are useful both in suppression and flux, whether joined with redness or paleness, coldness or heat.

Minorative Cure. When specific means are wanting, or even to assist them, we should use relaxants in hyperstenia; and vivificants in hypostenia ; nor should we fail to employ aperients against diseases of suppression, and astringents against those marked by increased flow of excretions. Moreover, we should prefer those which appear, from experience, to be peculiarly adapted to produce or restrain diaphoresis, diuresis, expectoration, &c.

according as the particular case requires, and according to the rules which we shall lay down, when we come to treat of diseases individually.

Palliative cure. To give an astringent vivificant in an hypostenic flux, or an aperient relaxant in an hyperstenic suppression, in order to overcome the symptoms of the flux or suppression before the root of the disease is destroyed, is always allowed in practice, while, in attempting to obtain such an object prematurely, we must be careful lest the means we use should prove irritant.

But, may we ever avail ourselves of that easy power which the vivificants, especially the austere, such as opium and bark, possess, of acting as astringents, so as to overcome a flux, although hyperstenic, before the morbid process has completed its necessary course? We answer, that if great caution be required to restrain any flux whatever, prematurely, it should be attempted with remedies analogous to the radical cure; and it becomes us to use still greater caution in procuring this to be done with remedies contrary to the same indication; and, therefore, without the most scrupulous observation of those precepts which we gave in chapter XIII of the first book, we do not allow, that a cure after this method should ever be attempted.

Prophylactic cure. Diseases marked by a flow or a suppression of excretions, when these are truly periodical, or symptoms of true periodical diseases, admit of being cut short by the bark, and by

the usual anti-periodical method ; but, in the use of such a *prophylactic cure*, we ought to use all that caution of which we stated the reasons in the 14th chapter of the first book, and of which we shall treat, in detail in the following book.

CHAPTER VIII.

OF WOUNDS AND OF THE HEALING PROCESS.

Phenomenology. A *wound* is any recent and bloody solution of the continuity of a part ; and *healing*, the re-union of that continuity, whether it has been caused by a wound, or by an ulcer. A wound cannot present its phenomena in less than three different assemblages, and healing in two more. In a wound, as a *lesion*, is considered only how, by the integrity of a part being impaired, there may arise diseases, organic changes, and death. In a wound, as an *irritation*, is remarked that morbid irritative state into which every living substance is brought, in whatever manner it may have been divided. In a wound, as a morbid process, is distinguished, the quality of that suppuratory mor-

bid process, which naturally supervenes to a wound on every occasion, when it has not been timeously prevented. In that process of healing which is called primitive, immediate, simple adhesion, or healing by the first intention, we observe how a wound may be re-united before a suppuration takes place; and, in that process of healing which is called secondary, incarnative or incarnation, we see the mode in which a wound may be healed after suppuration has completed its necessary course.

1. *Of wounds considered as a lesion.* A wound impairs both the peculiar vitality, and the constitutional functions of the wounded organ.

Now, there is no organ, however important its vital functions may be, of which a wound, whereby they are not impaired, is certainly fatal.

Whence, among observers, examples are not unfrequently found of wounds of organs the most important, as the heart, the brain, the stomach, &c. sometimes not followed by death. It is to be presumed, that such wounds have been made in such a manner, that the constitutional functions of the organ have been still sufficiently carried on during the time requisite for the healing of the wound, and that the latter has been accomplished without mortal suppuration or irritation. Without tearing the heart from the breast, or splitting the head with a cleaver, life is observed to remain for a few instants; forasmuch, as even without the brain and without the heart, the nervous functions and the circulation of the blood may continue. For which reasons it

is necessary to estimate the severity of a wound, as a lesion, according to the greater or less injury to which life is exposed, from the want of the constitutional function of the wounded organ.

The circulation of the blood is of the first necessity to the continuance of life, so that death carries off the majority of wounded men by hæmorrhage. The actual loss of blood is not less mortal than the rapidity or violence, merely, by which it rushes out of the body. In fact, some wounded men have been observed to outlive such losses of blood, that they have been in an apparently exsanguined state, while others have been known to die before losing all their blood, or even so much as those who survive. This happens, when from a wound there flows, in a given time, more than enters the heart in the same space; and, perhaps, it is in this way that blood-letting debilitates, not less by reason of the quantity abstracted, than of the rapidity with which, from the largeness of the aperture, it is taken away. Moreover, hæmorrhage may be hurtful in a two-fold way; when the blood does not flow out of the body, but collects in some cavity; it is worse still when it collects in some situation from whence it cannot, even by art, be withdrawn, as within the cranium. Finally, hæmorrhage is hurtful as a pre-disponent or efficient cause, of irritation or of suppuration.

These observations being premised, it will be understood, 1. That extensive wounds of the heart, and of the principal trunks of the blood-vessels, are

mortal. 2. That a wound of an artery of the second order, if not repaired in time, readily produces a mortal hæmorrhagy. 3. That from arteries of the second order rarely, from those of the third order more frequently, and from the small arteries generally, a hæmorrhagy may, after the loss of much blood, spontaneously cease. In such case it is observed, that the two extremities of the divided artery are withdrawn into the flesh, which serves to close them; and partly from this, and partly from the reduction of the arterial impetus, there is generated in the mouths of the vessels a plug, by which the hæmorrhage is stopped. 4. That in the wounds of arteries, fixed and secured to bones, as the vertebral and the intercostal, of those nearly free and situated among loose cellular substance, as the renal, and of those only partially divided, a hæmorrhage often continues until death, in consequence of the above retraction not taking place, although the lesion may appear small. 5. That in wounds of the heart and of the arteries, so slight that they have not proved fatal, the cicatrix often is converted into aneurism. 6. That in wounds of the arteries, naturally or artificially repaired, the circulation of the blood may be preserved by means of the admirable anastomoses in the part or member, and with that the life; but in the arteries, too great or too necessary to the part, the circulation may not be sufficiently preserved by the anastomoses, and hence either atrophy or insensibility, may follow, or immobility of the part, or gangrene and death.

7. That whatever quantity of blood may be already lost, and however little may yet remain, death will not take place for want of blood, if the hæmorrhage has ceased, but may be brought on by those diseases which the great cœneagia, acting as a predisponent or occasional cause, may produce.

The nervous function is not less necessary to life than the circulation of the blood; but, from the nerves being composed of long filaments united together, and because a nervous branch does not lose its sense, although its contiguous branches be divided, injuries of the nerves do not prove immediately mortal by the lesion of the nervous function, unless by a very great or total division of the brain, cerebellum, or medulla oblongata, or of the medulla spinalis, especially at its superior part, or of the nerves of the most important organs, as the heart. Wounds of less important, though still large nerves, may also prove mortal, from the consequent irritation, or the loss of the function, or gangrene of an organ, and are rarely cured without leaving stupor, torpor, or atrophy, of the organ itself. Wounds of the organ of respiration, by which life may be instantly destroyed, must be such as obstruct and prevent the course of the air in the lungs; as a complete division of the trachea, or large wounds of the diaphragm, of the lungs themselves, or of the thorax, whereby the motion of respiration is stopped. And the less severe wounds of this part often excite, or predispose to mortal irritation, supuration, and gangrene, in parts so important;

and, further, although they may heal, it rarely happens that they do not leave some defect in the performance of the functions of respiration.

Wounds of the liver, stomach, intestines, spleen, pancreas, kidneys, gravid uterus, and of the biliary and urinary passages, prove immediately fatal, when they entirely deprive the organ of its constitutional function; and when, again, they are not so severe, they may become fatal, mediately, by causing irritation, suppuration, collections, or gangrene; and when they heal, it is rare that they do not cause a defect of the exercise of the functions.

Wounds of the extremities, without the timely intervention of art, might produce death from hæmorrhage, irritation, inflammation, or gangrene; but with timely assistance, and without the concurrence of other mortal causes, they may be perfectly cured; and, further, they may, according to the nature of the lesion, occasion atrophía, insensibility, immobility, or the loss of a member.

Of a wound as an irritation. Ordinary irritation arises from the divided fibres bearing ill the loss of that communication so necessary to the complete enjoyment of life, or to the perfect performance of its functions. Besides this, the flesh is exposed to the contact of the air, which is foreign to it, and of the blood and other extravasated humors. Hence arises pain, more or less acute, with a sense of corrugation in the part; but if a merciful and expert hand remove the causes of irritation, and procure the contact of the divided fibres before the superven-

tion of swelling, heat, redness, and acute pain, the irritation quickly ceases; or, if such symptoms should arise, they are very slight, and, for the most part, are healed by simple adhesion.

Extraordinary irritation supervenes to wounds;

1. When the external air has access; or, what is worse, when it is confined.
2. When there remain extraneous bodies, whether pungent, corrosive, or venomous, confined in the wound.
3. When, from contusion, there are mashed fibres, broken bones, and corrupt blood.
4. When there is either a nerve, tendon, or ligament, partially or entirely divided.
5. When, from the collection of extravasated humors, the same parts, or a membrane, and especially a serous membrane, suffers distension or distraction.
6. When improper substances are rudely applied; such as, excitants, corrosives, or acid relaxants.

The ordinary irritation comes on soon after a wound is made, but the extraordinary supervenes after the lapse of some time, and sometimes after the wound appears closed by the first intention, either because the above-mentioned causes, having been little or nothing at first, have increased in the course of the process, or because the part, having been benumbed by the blow, becomes irritated as it recovers its sensibility. Irritation may assume two forms, that is, the inflammatory and the nervous; which two forms may exist together, or the one without the other, or greater, than the other. The inflammatory irritation causes a great afflux of humors to the wounded part, not less than to the

entire region where it is situated; and this takes place occasionally in a whole limb, with heat, redness, pain, and irritative fever, and sometimes enormous increase of volume. The nervous irritation causes pain, or numbness, or torpor, or tremor, or convulsive movements in the part, or delirium, or paralytic tremor, or epileptic convulsions, or trismus, or tetanus, &c. in the whole body. From the great irritation, whether nervous or inflammatory, may arise mortal hæmorrhage, or mortification, or amidst the tumult, death may suddenly take place; and these effects may also succeed the process of suppuration. But when the irritative causes have been destroyed, or removed by nature or art, and when no morbid process has arisen, the irritation quickly ceases.

§ 8. *Of a wound as a morbid process, and of incarnation.* The morbid process, to which a wound, when not healed by the first intention, is necessarily subjected, is a suppuratory inflammation of necessary course, which may be ordinary and mild, or extraordinary and severe. A regular suppuration runs three stages; in the first stage, the divided flesh is seized with inflammation; the effusion of blood being stopped, a sanguineous crust is formed, then oozes a sanguinolent serum; then arise, and by degrees go on increasing, heat, dryness, pain, redness, sometimes inflammatory fever, and the swelling, by causing the bottom of the wound to rise, dilates the wound,

and everts its lips. This may commence on the first, second, or third day, and terminate on the third, fourth, or fifth day, without any fixed rule, and then give place to the second stage. In the second stage fever arises, if it has not previously, and it takes the character of the suppuratory, which is marked by heat, thirst, and those particular phenomena which shall be described in the chapter on suppuration. The matter appears, at first, discoloured by the sanguineous crust which it dissolves, and every day goes on increasing in quantity, until the wound is clean. When the matter becomes white, tenacious, unctuous, and smooth, it is termed *pus*, and diminishes every time in quantity, so that the decrease of the discharge marks the term of the second stage, which usually lasts as long as the first, where circumstances, whether internal or external, do not make it longer or shorter. In the third stage the incarnation takes place, the fever diminishes much, or ceases, the heat, redness, and swelling, by diminishing, occasion a depression at the bottom of the wound, and the drawing together of its lips, from all the surface spring red granulations; in the interstices of the granulations, and in the angles of the lips of the sore appears a matter, not *pus*, but coagulable lymph, without smell, nearly transparent, reddish, which appears to be the medium of union. From the circumference, the cicatrix proceeds to the centre; rarely it commences from the centre; and sometimes it is formed through the medium of a crust, or scab; and thus the wound

is healed; the strength and flesh are quickly recovered; the cicatrix becomes firm, hardens, and takes on a colour somewhat more white than that of the natural colour of the skin.

The extraordinary and severe suppuration may be manifested in various forms; 1. The inflammation may be so violent, and the suppuration so abundant, as to cause hæmorrhage to return. 2. There may arise a nervous and inflammatory irritation; these, when produced, may be attended with all the phenomena and the severe consequences above described. 3. Without these accidents, and much more when they occur, gangrene may supervene. 4. and lastly, it may happen, either that the granulations may become obstructed, or that there may arise a new substance, callous, fungous, schirrous, &c. so that the wound does not heal, but degenerates into an ulcer.

The causes which produce the severe suppuration, are the following; 1. The great irritation into which the part may have been thrown by the causes aforesaid; especially if, from the inflammatory irritation, the swelling be much increased. 2. The wound, as, in the case of a punctured wound, its mouth being so strait and deep, or its course so tortuous, that it does not allow of the exit of all the extravasated fluids; in the case of a lacerated wound, or of a confused wound, with the loss of much substance, or of parts being mashed and torn, or of a wound with foreign bodies remaining within it, or pieces of broken bone wedged within, or of air introduced

and confined. 3. The evil circumstances which depend upon the patient; as the errors which he may have committed in the use of the non-naturals, fear, or the other passions, the shock sustained by the blow, the loss of little blood, the inconveniences and filth in which he lives, bad habit of body, ill health, &c. 4. The bad management of the wound, either for the want of means, or the fault of the person who has had the charge of it, and the having omitted to secure union, by adhesion, in due time, or from not having put the sides of the wound accurately into contact, not having cleaned it properly, or freed it from all the extraneous bodies which might have been easily extracted; or by having made use of things of a stimulating, irritant, or acrid relaxant nature, or having used the probe improperly or timidly, or from having placed the part in a bad position, or from having, through indiscreet curiosity, uncovered the wound before union had taken place.

The causes producing the irritation and the suppuration, as well as the irritation and suppuration themselves, may be the predisposing and occasional causes of other diseases, which moreover, may take effect, although the wound may have been closed by the first intention. These diseases consist in a diffusion or translation of the irritation, or inflammation to the membranes, either nervous or serous, to the viscera, to the vessels, &c. whence fevers of all kinds arise, and particularly the gastric, the meningitic, the pleuritic, the peritonitic, peri-

pneumonia, and hepatitis. In consequence of such diseases, the irritation or inflammation may increase and re-appear in the wound, or the wound may degenerate into an ulcer, and hence a wasting, or gangrene, or death, may be produced.

III. *(Of the process termed healing by the first intention.)* The primitive union is effected when the exact replacement of the sides and superficies of the wound is secured, before there has arisen an extraordinary irritation, or suppurative process; and, therefore, the free flow of blood, the removal of the contact of the air, of extravasated fluids, or extraneous bodies, and of the above-mentioned causes of irritation and inflammation, and the replacement of the sides of the wound being effected, union of its sides really takes place by the first intention; although, sometimes, even with all these favorable circumstances, this primitive adhesion does not succeed, and at other times, under rather untoward circumstances, it nevertheless succeeds very well.

Now, however complete the proximity of the sides of a wound may be, it is never such that there does not remain some small interstices between fibre and fibre, such existing intervals are quickly occupied by living blood and red coagulable lymph, which ooze through the fissure from the wound. Now, there proceed from each side of the wound certain very subtile minute fibrils and blood vessels, which, through the medium of the blood and coagulable lymph, closely entwining with each other, effect the primitive union of the wound.

The adhesive re-union of a wound is commonly followed by a most successful cure; but as we sometimes observe cases, in which, even after union, there arises irritation; so, we may add, that after such union, should evil causes operate, there may also ensue those secondary diseases, which, as we observed above, might succeed to inflammation.

Pathological etiology. The remote causes of wounds may be external or internal. 1. From hard and acute bodies pricking, cutting, lacerating, or pressing, which may penetrate into any part, either when moved against the body, or when opposed to its motion. 2. The shock and the percussion, whether leaving the external part entire, or contused, or divided, may occasion a fissure or laceration in some internal part, and chiefly where the impetus of the blow is concentrated. 3. Plethora and the morbid irritative states, by closing, distending, and constricting the vessels, may produce a rending or bursting internally, which, if the cause which produced it be quickly removed, will observe in its course the same laws as a wound from external causes. 4. All morbid processes, violent fevers, inflammations, obstructions, congestions, and nervous diseases may produce solutions of continuity in the internal tissues of the organs which they affect. 5. Brown also pretends that the internal cause, at least of the greater number of wounds, may be debility; but neither reason nor experience can allow, that ceneagia could ever have been an internal cause of wound.

In considering a wound as a lesion only, we have not yet come to consider it as a disease, but as a cause of disease; and, therefore, in the investigation of the proximate cause of wounds, it ought only to be determined, in what condition the vital force exists, both of the part and of the whole, both in the irritative wound, and in the suppurative, both in healing by the first intention, and by the second. Now, as such a theory suggests many and not unimportant questions, in order to reason at once upon these questions, and upon all that properly belongs to the subject, we shall explain our views in the following notes.

1. Ought the nervous phenomena, produced by the irritation of a wound, to be held as hyperstenic or hypostenic. The Brownonian surgeons, yet not instructed in the doctrine of irritation, regard pains and convulsions as phenomena of direct debility, and stupor and torpor of indirect debility, whether these effect only the part, or the whole body of a wounded person. In the present day, we can correct an error so pernicious, and establish, 1. That pains, convulsions, torpor, and stupor, as we have demonstrated in the 5th chapter, do not depend upon a nature different from that of nervous diseases in general; 2. That any such nervous affection, by whatever phenomena it may be manifested, is not hyperstenic nor hypostenic, but entirely irritative. 3. That cannot irritation be quieted, unless by naturally passing off, or by artificially removing, the causes whence it arises; and, 4. That

being obliged to attempt the relief of such symptoms, it is suitable always to order a method sufficiently relaxant, to diminish the impetus of the irritation, and to prevent the violence of the inflammatory process, which, from the high nervous irritation, may be afterwards produced.

2. May the irritation, which we called inflammatory, and the same morbid process, in its first or inflammatory stage, ever be hypostenic in wounds? Let us hear Monteggia (vol. II. sect. 20): "Some injuries in the very act of infliction, by stimulating, induce a greater or less tendency to inflammation, and so produce, besides, a considerable loss of blood, that two morbid causes, of opposite natures, are combined in the same subject: to wit, one stimulating, and the other debilitating: In this case it is manifest, that the loss of blood will diminish, or entirely remove the tendency to inflammation; as, in fact, we see in cases of wounds, which, having discharged much blood, are the less liable to inflammation."

Sect. 21. "It is necessary, however, to reflect, as to the *different modes* of application and acting of various stimulants, that the subtraction of one, is not always sufficient to *annul* the effect of excess of others. The excitement induced by the stimulating variolous contagion may be well corrected, *in part*, by the debilitating method; but it is not possible to prevent it from producing some degree of *its specific* inflammation. And thus also, equally, may a severe lesion give rise to

"a consecutive inflammation, *notwithstanding* a
 "great hæmorrhage, which may have brought the
 "individual to an *extreme* state of debility. In
 "fact, it is not rare, that there is observed to suc-
 "ceed, to that great *debility*, the developement of
 "an *opposite* state, inflammation, not only *local*,
 "but also *general*. And if *pre-occupied* with the
 "idea of the weakness, induced by the preceding
 "hæmorrhage, *we shut our eyes* to the new state
 "which has succeeded to it, the patient may *perish*
 "of the effects of a *true* inflammation. Besides the
 "case of great wounds, a most frequent example of
 "this change, from the asthenic to the sthenic state
 "occurs in women in child bed, especially in those
 "who, from a *profuse* hæmorrhage, have been obliged
 "to be assisted by artificial delivery. The great loss
 "of blood has brought them *almost to death*:
 "hence it happens, that many of them recover, by
 "slow degrees, from that *extreme* debility, and are
 "seized with tensions and pains in the belly; with
 "true *inflammatory* fever, brought on from the
 "local lesion of the uterus rent or contused during
 "the obstetrical operation; and in this state *expe-*
 "*rience* has proved *indubitably*, that the *only*
 "means of curing this second consequence, is to
 "have recourse to *repeated blood letting*, with-
 "out taking *too much account* of the hæmorrhage
 "that preceded."

Now a surgeon, as Monteggia, (not a little Brown-
 onian) shows himself to have had great penetration,
 when he knew the nature of the inflammation of

wounds to be always hypersthenic, when he saw its independance of the physiological state of debility, even the greatest that could be produced by hæmorrhage, and, much more, when he refers the cause of this to the specific causes of disease, and of the operation of agents ! But when, immediately after displaying so much knowledge, he falls back into the phantasies of Brownianism, concerning the passage of direct and indirect debility, the one into the other, and into hypersthenia, does he not show that the system darkened his intellect ? We ought to consider as certain ; 1. That the physiological debility of the patient, whether it be from ceneagia, or from other causes, does not determine the pathological nature of the wound. 2. That the inflammatory irritation, in like manner as the nervous, is not hypersthenic nor hyposthenic, and still, for the same reason above given, must be cured by the relaxant method. 3. That the morbid inflammatory process, without any doubt, is always in its nature hypersthenic.

3. May suppuration in wounds ever be considered hyposthenic ? In the following chapters we shall demonstrate, that the nature of every suppuration and every ulcer is always hypersthenic and irritative ; and, in this place, we have not proposed the present questions, but to preserve order, and for the remembrance of two things elsewhere spoken of several times. 1. That when the suppurative process does not give place to incarnation, but declines into an ulcer, whether it be because the

granulations of the wound are affected, by hardness or obstruction, or by soft swelling or congestion; or because there grows over it, some new substance, whether callous or fungous, &c. far from believing the part to have fallen into debility, we hold it for certain, that from constitutional or local causes, it is taking upon itself some new morbid process, more hyperstenic than ever; and, 2. That in this state, if, from the great discharge of matter, from the former loss of blood, from the fatigue suffered, and from the abatement of the inflammatory phenomena which preceded, there arises, or appears to approach a greater physiological debility, although the usual and necessary restoratives be not omitted, it is not the less necessary to regard the suppuratory process as hyperstenic, and to treat it as such.

4. How is the healing of wounds effected? Galen has said: *Cognosci debet circa carnis generationem quod materies illius sit sanguis bonus, opifex vero et author natura*. And, in truth, the vital force possesses an assimilating power, which when it is sound and good, naturally tends to cause the concretion of neighbouring tissues, if happily they are not isolated by substances, which oppose such an union. Thus, the moisture of the serous membranes, the mucus, and the epithelium* of the mucous linings, the fat of the cellular adipose substance, the epidermis of the skin, the polish of the in-

* *Epithelium*, the name given by Ruysch to the fine membrane covering the mucous membrane, as the epidermis does the skin.

ternal surface of vessels, and particularly of the arteries, have, as the very important and conspicuous services which they render to the existence of the body, to oppose the accrescent tendency of tissues, and thereby prevent them from growing together. It is further to be believed, that nature has not deprived of such means the primitive elementary fibres. For which reason, Galen acutely saw, that sound and good blood was the material which forms the solder of re-united fibres, and the power which gives form to this material, to be that same natural power, whereby the body lives; so that, if disease destroys the aforesaid natural isolaters of tissues, there arise morbid adhesions; and it is enough, in cases of wound, that art should remove those things which oppose themselves to the union; and that it should leave the substance of the wound sound, unirritated, and not inflamed, and secure the approximation of its sides, so that they may remain in contact, and at the shortest distance, in order that reunion may be completed without fail.

Is it true, that, for the healing of wounds, a certain inflammation, called adhesive, is necessary? From observing that cold-blooded animals are less liable to inflammation than those of hot blood, and that they have the faculty of forming new parts in greater perfection; that in our bodies, the parts least liable to inflammation, as the bones, have a stronger power of regeneration than others; that the wounded, who are left ensanguined on the field of battle, recover better than those assisted by

surgeons, who are often more officious than informed; that it is never the greatness, but rather the smallness, of the quantity of blood lost that prevents adhesion; and that what is termed the Adhesive-inflammation, is the more efficacious in proportion as it is less considerable, and of short duration; we are persuaded that the healing is entirely the work of the natural vital force, not irritated nor inflamed, but healthy. But, from our having distinguished inflammation into a morbid process, and a simple morbid state, the present question may be settled with the greatest facility and clearness: because, it not being possible that a true morbid inflammatory process can supervene upon parts, when wounded and separated, without suppuration taking place, it follows, that the adhesive inflammation cannot be believed to be anything but a simple morbid hypersthenic state. Now, it being inevitable that the wounded substance must suffer irritation and hypersthenia, from the new agents with which it comes into contact, it would be a needless dispute to maintain, either, according to our view, that the irritation and state of phlogosis, although always hurtful, yet admit, when they are slight, of the natural power of uniting the sides of a wound, or, according to the contrary opinions, that such morbid state of phlogosis and irritation are also those salutary means, by which the vital force performs the sublime office of re-uniting wounds, if it were not that two ideas, pernicious in practice, have arisen

from the hypothetical idea of adhesive inflammation, the instant correction of which we cannot help demanding of surgeons. 1. That the increased vigor of the machine, and the hypersthenia of the part, is believed to be very useful to the re-union of wounds. We, on the contrary, believe that, for the re-union of wounds, it is always required that the irritation and phlogosis of the part, if it were possible, should be reduced to nothing, and that in all cases there ought to be induced so much physiological debility as to remove every disposition or cause of any threatened irritation or inflammatory process. 2. That the healing may fail, either from excess or from defect of inflammation. On the contrary, we have demonstrated, that in cases of violent irritation, with stupor and torpor, from contusions and other accidents, and from obstructions, congestions, callosity, &c. of the wounded part, there does not exist debility, but the irritative or inflammatory state, more severe than ever, whence the relaxant method becomes the more useful.

6. In what manner does inflammation produce morbid adhesions? We return to this question, which we have already touched upon above, only to observe, how, from its having been observed, that morbid adhesions are formed by inflammation, the notion has arisen, not less erroneous in physiology, than in logic, that inflammation is indispensably necessary to adhesion. We think that the inflammation, by swelling the parts and putting

the contiguous tissues in closer contact, by drying the surfaces, and destroying those fluids which usually prevent adhesion, and with which the parts are covered in health, and, finally, by sometimes impairing the continuity of the fibres of those organs which it occupies, does not act as an immediate cause of adhesion, but rather of those ill-conditioned states, whereby the natural assimilating power, although weak, sometimes imperfectly unites parts which ought to be separate, and sometimes providently produces the union of the surfaces, which it would be a misfortune if they were to remain ununited.

7. What anatomical difference is there between the primitive and secondary re-union? It has been believed, to the present day, that in the simple adhesion, nothing more was done than the union between the two pieces of each fibre which had been separated, without any re-production of substance; and that, in incarnation, there were generated new vessels, new nerves, and new substances, developing themselves from those belonging to the surface of the wound. To day it has been almost demonstrated, by pathological anatomy, that in the human body there is never any production of substance, and that, even when there has been great loss, the healing does not take place but by simple adhesion of the separated surfaces. It does not become us to treat more of this present question, which appears, however it may be resolved, to be neither useful nor hurtful in practice.

Diagnosis. The general observations already made on the phenomena of wounds, and, still more, a special knowledge of particular wounds, an exact acquaintance with anatomy and physiology, by which the site, uses, and relations of parts are known, and extensive practice in the irritative, nervous, inflammatory, and suppurative diseases, are necessary on every occasion when an exact diagnosis is to be made, not only as to the existence of a wound, but what is more, as to its nature, both as a lesion and as a disease, not less than as to its cure.

An external wound is before the eyes, either immediately, or as soon as it is cleansed from the sanguineous crust which sometimes conceals it. An internal wound is known to exist, 1. by certain information, as to its cause, whether externally traumatic, or internally sufficiently violent; 2. by the outward discharge of blood, or other fluids, in such quantity and of such quality, that they clearly can proceed only from ruptured vessels within; 3. by those signs which denote some extravasation of the fluids themselves in some internal cavity; and 4. by the absence of every other disease, or by the presence of some disease which plainly shews itself to be a cause or an effect of the wound.

The quality of the lesion which exists in an internal wound, ought to be investigated, 1. from the variation in the patient's feelings, from change in the position of the part; 2. from the particular mode in which the function of the organ is affected; and 3. from the alterations which other parts suffer

in consequence of such affections. Besides this, we have, in external wounds, signs arising, 1. from the shape and quality of the external body, compared with the shape of the wound itself; 2. from the direction which the same body has taken, and from the posture in which the patient stood; 3. from the qualities of the fluids which we discharge, that is, whether blood only, or blood mixed with other humors, air, feces, &c. and 4. from explorations made with the probe or with the finger, although of such means surgeons of the present day properly avail themselves but little.

The nature of diseases succeeding to wounds, (whether be they irritation or inflammation of the part; general diseases, as fevers, and especially the gastric; nervous diseases, as the various forms of palsy, tetanus, epilepsy, &c. inflammations, as meningitis, pleuritis, peritonitis, hepatitis, &c. &c.) is often of doubtful diagnosis, inasmuch as it does not clearly appear whether they exist as irritations or as morbid processes, especially when, from an irritative state, they are, in truth, passing into diseases of process. But in such cases, our prognosis is to be kept in reserve: the doubt is of no importance, since the curative method ought always to be relaxant, as the urgency of symptoms may require.

The diagnosis of the suppuration of wounds, so far as relates to the time when it happens, and to whether it be simple or ulcerative, especially in internal wounds, must be collected from the diagno-

sis of suppuration, ulcer, and consumption, concerning which we shall have occasion to reason in their proper place.

The immediate re-union, or healing by the first intention, is known by the phenomena of irritation progressively diminishing, from hour to hour, from the moment of the dressing of the wound until the fifth day, without there arising any new symptom of inflammation ; the secondary re-union is declared if the matter be good in quality and quantity, and if the symptoms of the suppuration are all good. It is known by the appearance of an external wound, and it is judged of in the cure of an internal wound, by the diminishing of the symptoms of suppuration and of the quantity of matter, without there arising any symptoms of cachexia or of wasting, while, on the contrary, the physiological strength is daily improving, and the use of the part is gradually recovering. Morbid adhesions, and internal organic changes, are made known by the limitation, entirely local, which the part suffers in the free use of its functions, and especially of motion.

Prognosis. The prognosis of wounds, as of every other disease, has regard, 1. to life and death ; 2. to the perfect or imperfect curability of the injury ; 3. to the duration of the cure.

1. With regard to life and death, we have at the present day justly discarded the ancient epithets and distinctions of mortal wounds, into such as were absolutely mortal *per se*, and from the nature of the accidents ; because there are no wounds, ap-

parently mortal, which may not heal. The title of *mortal* is therefore no longer given to any wound, but the worst prognosis is expressed by the epithet *dangerous*. It is requisite, moreover, to specify whether it seem dangerous by reason of the number or the nature of the lesions, or because it threatens irritation, inflammation, gangrene, or other evil secondary diseases; or, lastly, whether it may be expected to become dangerous from the bad state of the patient's health, or from the supervention of external occasional causes of evil tendency.

2. Wounds which do not appear dangerous, are called curable; but in the curable, as well as in the dangerous in case of recovery, we must explain, from observing the nature of the injury, whether the cure shall be perfect or whether it shall be imperfect, by leaving either losses, organic changes, or deformities of the part.

3. Finally, by regarding the extent of the injury, the difficulty of dressing it well, the seat which it occupies, &c. we have to pronounce, whether the cure shall be short and easy, or tedious and difficult.

Of the things called *perizie*, (that is, the opinions which are given, at the criminal tribunals, after the dissection of bodies, as to the true cause of the death of the wounded), it is the province of *medical jurisprudence*, from which assistance is derived, to become always more and more precise. We shall only observe, that our art, always obscure, does not possess so much certainty, with regard to

such judgements, as is commonly believed; and, therefore, it appears to be most just, that, in these studies, regarding things that are doubtful, our conscience should ever be just, and impartial in the matter, inclined to the good, rather than to the injury of another.

Cure. We shall give, as belonging to our province, general precepts only, regarding the cure of wounds, the minute particulars being to be found, and especially the manual, and artificial treatment, in the many and meritorious works on surgery which we already possess.

In the cure of wounds, we ought to study to obtain four intentions. 1. To procure adhesion, by the first intention; 2. To prevent irritation and inflammation, or to oppose and moderate them when they have arisen, and thus to favour the healing process; 3. To moderate the suppuration, if it has taken place, and thus to favour the cicatrization; 4. To guard against secondary diseases, so as to prevent or to cure them. Each of these things requires a comment.

1. Surgery, at the present day, admits as a most general maxim, that the cure of a wound, by the first intention, ought always to be attempted. The old surgery, sometimes neglected so beneficial an operation, and especially in the following cases: 1. When the wound was so large, so that it seemed difficult, or impossible to obtain adhesion. In the present day, because there is no case of wound, however large, of which there are not instances

of cures, by the first intention, being accomplished, it is concluded that such a result is always to be hoped for, and, therefore, proper to be attempted;

2. When a wound, from having been neglected, is found already irritated, inflamed, or even suppurated; even in such a case, surgeons of authority, of the present day, advise the union to be attempted, because, if not in the whole, at least in part, adhesion may be effected, and because an attempt so made (which is the prime argument) is also the best means whereby to moderate the irritation, inflammation, and suppuration.

3. When a wound is contused, lacerated, or has suffered loss of substance. In the present day, in this case also, union by the first intention may be procured, and is always attempted, both because it is believed that the substance is not repaired or re-placed in the incarnative cure, and because, if the loss be small, the primitive re-union may still become complete, or if the loss be great, union may still be had in part.

4. When a wound encloses within itself any extraneous body, which might prevent the primitive adhesion. At all times, in such a case, we should distinguish whether the presence of the extraneous body is uncertain, or if it be certain, whether it be deeply lodged, and whether contrary to the direction of the wound, or so engaged that the extraction thereof might occasion great irritation. In these circumstances, the primitive adhesion is to be procured, and the expulsion of the foreign body is to be left to nature, or if it be necessary, it may be extracted by an

artificial opening, or otherwise, at a future time. When, again, the extraction is possible, the extraneous body of a very irritating kind, and if it requires enlargement of the wound, or other chirurgical operation, we should not fail immediately afterwards to procure adhesion.

5. When, from some particular reason, as in certain surgical operations, it is required that the wound be not soon closed; yet, in this case, the aperture should never be allowed to remain greater than what is required by the surgical indication.

When adhesion is attempted to be procured, it is always well to prevent irritation and inflammation. Nothing can avail for this purpose but the relaxant method, and it alone ought also to be practised when irritation and inflammation have already arisen. We shall find even the Brownian surgeons all assenting to this, when the irritation is inflammatory, or the inflammation hot, acute, and violent, because they believe, that in such cases the re-union fails from excess, not from defect of the adhesive inflammation: but in cases of nervous irritation, and especially with stupor or torpor, as in paralysis, coma, apoplexy, &c. and in cases of inflammation, congestion, or obstruction, when the swelling is neither very hot nor very painful, who can withhold them from officiously ordering their stimulants?

3. A suppuration must be treated according to the rules which we shall give hereafter. We observe at present, in passing, that the edges of wounds

should be kept only so far asunder, as is sufficient for the free discharge of the matter, that there be removed from the whole, and from the part the irritative agents, and that the use of the non-naturals be duly regulated.

4. If, during the existence of acute local inflammation, there should arise any general acute disease, it should be treated by the relaxant method, which must be the more vigorously enforced, as it may appear to be required by the actual severity of the symptoms, due care being had that the local inflammation may not operate as an incentive, by which the general disease may be rendered obstinate, or more severe in future. If, again, during a suppuration, there should appear to arise, from the bad habit of body of the patient, any chronic disease, which threatens to convert the wound into an ulcer, the cure appropriate for the constitutional disease, whether herpetic, syphilitic, scrofulous, &c. should be immediately applied.

Management of the part. The most important thing to be attended to in the treatment of a wound, when simple apposition of the edges fails to stop the hæmorrhage, is to employ the means necessary for this purpose, and when simple pressure suffices, it is to be preferred to every other means, which might impede the primitive adhesion. When, the rupture of any considerable vessel requires a ligature, it is to be applied immediately. When from the smallness of the vessel, the suppression of the hæmorrhage may be expected to

take place, the application of snow, of narcotic contra-stimulants, or of the chemical means for coagulating the blood, may be tried, but the actual cautery should be avoided as cruel, and the potential as injurious. When the hæmorrhage arises from an artery, being partially divided, the division is to be completed at once with the knife. 2. Before or after the hæmorrhage is stopped, the extraction of foreign bodies should be effected, when this operation is easy, and admits of being done without producing irritation, or renewing or causing hæmorrhage. 3. The knife is to be employed, to enlarge wounds of tendons, ligaments, aponeuroses, or membranes, when they are so narrow as to impede the exit of foreign bodies, or of coagulated blood. 4. A nerve, when partially wounded, is not to be touched at first; but if, afterwards, there should appear symptoms of nervous irritation, the whole of it should be immediately divided. 5. The probe is never to be used for mere curiosity, or in order to pronounce the nature of a wound; except in the rare case, where the certain knowledge whether an extraneous body is lodged in the wound, is essential to the proper treatment of it; although in any case where, for any particular reasons, it is proper that the wound should remain open, it is the best way to leave the use of the probe till the suppuration has been established, when it generally may be used with less irritation; and a probe should not be metallic, except in the rare case, where it is found impossible to fulfil the intention of the

exploration, with the finger, or with a probe of elastic gum, or of wax.

6. A wound is to be cleaned of all blood, and then its edges must be allowed to swell: all the blood that oozes from the wound, and does not proceed from hæmorrhage, is to be allowed freely to flow out.

The edges are to be brought together in the most regular manner, but not closed firmly, unless the discharge of blood has first ceased: and lastly, placing the part in the most favourable position, and having it supported there, adhesive straps, or in some very rare instances a suture, with compresses and bandages, are to be employed, so that the divided surfaces, may acquire the nearest possible contact.

7. These same means are to be employed, when it is desireable that the wound should remain open; but the sides of the wound are to be kept so far apart, as is deemed sufficient to allow, of the discharge of foreign bodies, and of matter; placing over the surface the most simple, and mild covering, so that it may not prove irritative.

8. Quiet is the friend of wounds; the body ought to be placed in such a manner, that nothing shall press on, or in the least move the part: the limb is to be put into the greatest state of relaxation towards the part that is hurt; the part is to be placed in such a position, as shall of itself suffice principally to approximate the surfaces of the wound, when it is wished that it should be healed by the first intention; and, as we favour the

exit of extraneous bodies, when it is necessary to leave a wound open for that purpose.

Blood-letting. Blood-letting may be indicated in wounds, as a means adapted to stop hæmorrhage, and as the most powerful means for preventing the consequences of irritation, and reducing inflammation. In cases of hæmorrhage, blood-letting is more usefully employed, when the hæmorrhage proceeds from internal, than when it proceeds from external wounds, in which it is better to trust to the local means above mentioned. Against irritation and inflammation, again, it is necessary to practise blood-letting, so commonly, that it may be truly said, that there is not perhaps a case of wound in which it can be properly dispensed with, so that it ought to be considered as established, that the omission of, or sparing use of blood-letting may be injurious, but the excess of it never. And we willingly repeat that cases of stupor, torpor, and convulsion, where the swelling is soft, livid, not very painful, and of contusion, are those in which the loss of blood is required to be the most copious of any. General bleeding ought, in such cases, to be practised unless there be some important or peculiar symptoms to forbid it; but, besides general bleeding, often repeated, it is necessary to make as many particular or local bleedings as are sufficient to reduce the irritation or inflammation, when they are ever considerable in the part.

Diet. Ice is most gratefully cooling to the wounded. For the first days, it is necessary to ob-

serve the most perfect abstinence from food; but, when the state of the strength demands it, and the impetus of the irritation and inflammation are past, some sorts of food may be allowed, as vegetables, the ripe sweet acid fruits, emulsions, sherbet, diluted fruit vinegars, lemonade, thin broths, &c. To such a diet, which they dare not deviate from, the Brownonians unite exciting mixtures!

Internal Remedies. Without some extraordinary necessity, no pharmaceutical remedy is required to be employed in wounds, the above dietetic rules being fully sufficient. In case of indigestion, cathartics are to be employed; and also vomits, if the position, in which it is necessary to preserve the part, will admit of their employment. In hæmorrhages from internal wounds, when ice, blood-letting, and the application of a ligature to the extremity of the vessel, have proved ineffectual, it necessarily becomes proper to use digitalis, hyocyamus, laurocerasus, or belladonna, in order to diminish the arterial impetus. In poisoned wounds, as the bite of a dog affected with hydrophobia, or the bite of a viper, &c. it is necessary to make use of all practicable means, considering the patient less as wounded than as poisoned. In suppurating wounds, which threaten to degenerate into ulcers, from the bad habit of body of the patient, we have already said, that the cure of the constitutional disease ought to be immediately attempted.

Excitants. Opium, wine, spirits, tinctures, aromatics, &c. as things most noxious, ought to

be banished from the external no less than from the internal cure of wounds. Opium merits some exception, from its constant power of soothing pain, and procuring sleep; and, therefore, in wounds of organs of little importance, when, at the risk of causing a little increase of heat in the part, we obtain sleep and a cessation of pain, it would be drivelling to be afraid of giving it; but in wounds of the most important organs, and when every slight increase of inflammation might occasion irreparable injury, it is necessary to banish opium, not less than the other excitants, from our practice.

CHAPTER IX.

OF COMMOTION OR CONCUSSION, OF DISTENSION,
AND OF PRESSURE.

Phenomenology. The forcible enlargement of tissues in length and breadth is called *distension*; the gravitating of one part over another, *pressure*; and the physical agitation of the body produced by a shock, *commotion or concussion*. In commotion, the shock, when principally confined to the part moved or struck, is called a *stroke or blow*; and that which

is concentrated, according to the laws of mechanics, in the part diametrically opposite to the part struck, is called *counter-blow*.

We shall reason on the subject of commotion, distension, and pressure, conjointly, because, however they may differ as motions in mechanics, they produce the very same injury to the living body.

Commotion, distension, and pressure, produce such derangement in the intimate textures of the body, and especially of the part hurt, that it must be presumed, that the tissues, to the end of the most minute particles of their fibres, are disturbed from that order which is essential to the right and healthy state of organization. For which reason, in order to treat exactly of such derangement, it is necessary to consider it, after the manner which we followed in treating of wounds, that is, as a *lesion*, from the injury done to the living body by the derangement of the texture of the part; and as an *irritation* from that irritative state, into which the machine, or rather the vital power, is unavoidably thrown, as soon as the organization comes to be disturbed; and as a *morbid process*, from those diseases of process, which may take their rise from such derangement.

1. *Of the said derangement, as a lesion.* Considering the nature of the injuries, that result from commotions, distension, and pressure, they are distinguished in the schools, into the following species:

1. *Derangement of the tissues, without visible organic alteration* is that injury, in which the

colour, form, consistence, and site of the injured part do not appear altered ; although the irritation sometimes may be excessive and obstinate, and not unfrequently followed by inflammation, showing that there has been a certain dislodgement of the intimate texture of the fibres, and perhaps in the particles composing these. 2. *Ecchymosis* is that derangement of the tissues, in which an effusion of blood takes place into the cells of the part : although it is also called particularly *ecchymosis*, or *contusion of the first species*, or *simple*, or *diffused* *ecchymosis*, when the signs of the internal rupture of vessels are wanting ; when the signs of the effusion of blood are not observed, but lividness, blackness, and yellowness, not contentrated but diffused, appear, it is concluded that the blood has been forced out of the little mouths, or simply from the enlarged pores of the vessels themselves. 3. *Ecchymoma*, although synonymous with *ecchymosis*, is more particularly applied to the *contusion of the second or circumscribed species*, in which, from the interior vessels of a part being smashed, ruptured, or burst, a tumour arises over their site, in which the blood collects, and which appears very black, livid, yellow or greenish, externally. 4. *A contused wound*, or *contusion with a wound*, is when the contusion and wound are made at once, in such a manner, that each, considered independently of the other, must be deemed hurtful, both as a lesion, and as an occasion of irritation, inflammation, organic changes, or death. 5. *Crushing*, is when in the midst of contused flesh, there is such a collection of mashed

fibres, broken bones and blood, that there is no longer any indication or appearance of the natural texture of the parts. Now these lesions may happen singly, or two, three, four, or all the five, may be combined in one case; and in commotion, the contusion, wound, and crushing, may be produced in the site of the counter-blow, while, sometimes, the part where the blow was actually received appears unhurt, or only slightly injured.

In respect to the bad consequences of such lesions, we observe only, that the living processes going on in the part being disturbed, as well as the constitutional functions of the organs being injured, suspended, altered, or impeded, those diseases may arise, or those organic changes be produced, which we described in treating of wounds, or immediate death itself may be occasioned, in the same manner as, or even more readily than in case of a wound. Nor, from the organic alteration sometimes not being visible, as we have observed in the first species, let any one suppose that this derangement is more slight or mild than those of the other species; since, besides being liable to produce both irritation and inflammation in the most violent degree, it does not fail, probably by such a dislodgement of the fibres as deprives them of the power of duly performing the processes of life, to induce the immediate cessation of life itself, without any organic lesion of any kind being visible, as we observe when death is the consequence either of great mechanical shocks without actual percussion, or from strokes of electricity, lightning, &c.

2. *Of the Derangement of Tissues as an Irritation.* Without going to too great length in treating of the irritation, which necessarily succeeds the derangement of tissues, let us remember that this irritation, as well as that peculiar to wounds, may be manifested under a nervous form, by pain, stupor, convulsion, or torpor, or under an inflammatory form, by redness, heat, and swelling; that it may be ordinary and such as is proportionate to the organic alteration, or, by the concurrence of other internal or external causes, may arise to an extraordinary and violent degree, or finally, that it may produce the same consequences and even greater than a wound. In wounds, indeed, irritation is the more to be apprehended, when they are accompanied with laceration, contusion, and concussion, than when they are simple.

Of the derangement of Tissues as a morbid process. In proceeding to apply what is already said of wounds, to that derangement of the tissues, which we are now considering, the phenomenology of the morbid process, which alone remains to be spoken of, is easily explained. Let us only observe, 1. With regard to the causes, that the derangement of tissues, from opposing the speedy restoration of the usual actions of the part, becomes in fact a cause of morbid process; and, therefore, in contused wounds, in ecchymoma, and in the case of a crush, suppuration is almost inevitable; and it is rather desirable that it should come on, than that gangrene should prevent it; 2. With respect to the

phenomena, they are the same, the very same as those described in speaking of the morbid process supervening upon wounds, except that, when a part has been crushed, it must be considered in the same manner as we shall observe of gangrene; 3. With respect to the diseases liable to succeed such injuries, all those enumerated as consequences of morbid processes succeeding to wounds, as irritation, inflammation, congestion, obstruction, and local nervous affections, general febrile, nervous and inflammatory diseases, as fevers, and especially the gastric, epilepsy, apoplexy, encephalitis, pneumonia, hepatitis, &c. may more readily succeed any species of derangement of tissues, whether it may have originated from concussion, pressure, or distension.

Of the resolution of a derangement of the Tissues. However easy and quick an operation of nature the simple healing of wounds may appear, when has the natural power of forming parts been considered as capable also of re-establishing the disordered fibres in cases of concussion, pressure, or distension? Such an operation, we call resolution of the derangement of the tissues; which is partly accomplished visibly, and partly invisibly. The visible part of the resolution of the derangement is that, by which we see the blood that has been effused and collected, taken up by the absorbents and re-conducted into the circulation, the rupture, the bursting, and mashing of the vessels being repaired by the coagulable lymph, the crushed portions of flesh, if there be any, being dissolved and washed

away by the pus, and hence by the usual process of incarnation the lesion being entirely repaired. The invisible part of such an operation ought to be supposed to consist in the re-establishment of the healthy condition which, by the same natural power of forming parts, is effected in the figure, substance, consistence, and symmetry of the fibres, not less than in their primitive particles. In fact, it is observed that time, without any assistance, is the restorer of losses, and brings also into complete repair the minute derangement of the tissues. And according as the lesion has been great or small, the vital force strong or weak, and the exterior circumstances favourable or unfavourable, resolution or the complete restoration of perfect health takes place, or the injury leaving behind it either insensibility or immobility, a limitation in the use or atrophy of the part is the result.

Pathological etiology. The pathological etiology of the derangement of tissues is also very like that of wounds. Among the remote causes, besides bodies mechanically pressing, distending, striking in passing, and percussating, must be named also the imponderable bodies, as electricity, galvanism, magnetism, caloric, light, sound. Among the internal causes, besides plethora and morbid processes, all which, when violent, may produce a derangement of the minute tissues of any organ, even to the extent of crushing, must be added collections of humors as distending causes, hard tumors as pressing causes, and pulsating tumors or aneurisms as causes

giving a concussion or shock. The latter are called *ossivori* when they slowly consume the bones.

With respect to the proximate cause of the bad consequences of derangements of tissues, we observe that the irritation of the part, as well the inflammatory as the nervous, and however the derangement may have been produced, being neither hyperstenic nor hypostenic, must nevertheless be treated by the relaxant method in order to prevent inflammation. 2. That suppuratory inflammation, although the part may have been crushed, is always of a hyperstenic nature. And 3. That the resolution of derangements of the tissues is entirely the work of the natural power for forming parts, is a matter now rendered so evident, both by the thing itself, and by the many proofs we have already adduced in the course of our reasoning about the pathology of these injuries, as to overcome even the obstinacy of the Brownonians.

Diagnosis. The general diagnostic rules, which we have explained in the preceding chapter, when treating of wounds, are all applicable to the diagnosis of derangements of the tissues. When these are external, they are visible to the eye: when internal, let us add, that, when there have preceded or remain still in operation any violent causes, whether in the form of concussion, pressure, or distension, or when there exists a state of great plethora, or a violent morbid process, there is always reason to fear, that a mechanical vital alteration may take in the whole body, and es-

pecially in the organ suffering most. When the functions of the organ appear much retarded, disordered, or suspended, or prevented as much as, in regard to degree, appears conformable to the character of the disease, there is reason to conclude that certainly some organic derangement of the tissues has been produced. And in such a case, if the organic properties still appear unaltered, we shall consider it to belong to the first species of derangement of tissues: if lividness, blackness, and yellowness simply appear, it must be considered as a contusion: if, besides this, there are signs of effusion and internal collections of blood, we must conclude that there has been bursting or rupture of vessels: and, finally, if there supervene signs of gangrene, we conclude there has been a crushing of the parts.

Prognostic. The derangement arising from concussion, pressure, and distension, prove rather more dangerous, comparatively, than wounds; as we observe that a contused wound is much more dangerous than a simple one. With this in recollection, it will be easy to apply the rules laid down respecting the prognosis of wounds to that of derangements of tissues. In this place, our astonishment at the inconclusiveness of the reasonings of the Brownonians, who consider the phenomena of inflammation in the derangements of tissues as most particularly proceeding from a *fund* of debility, leads us to observe, that they themselves, among the causes to which they are accustomed to attribute the peculiar

severity of these injuries, do not omit to transcribe from the ancient writings this principal observation, that, in derangements of the tissues, there is, in proportion to the injury, much less loss of blood than in wounds. Little loss of blood, a cause of severity ! and debility the effect !!

Cure. The cure of the derangements of tissues, whether for the general indications with which it ought to be undertaken, or for the management of the part, and for the administration of particular means, agrees so much with the general principles, already explained in treating of the cure of wounds, that we have no occasion to do more than subjoin the following few notes :

1. *Management of the Part.* If there be laceration, in consequence of which, under tissues irregularly broken and bruised, there have been formed collections of blood or other fluids, accompanied with distension of nerves, tendons, &c. so that it is necessary that the surgeon render the wound regular with the knife, this should be done immediately ; if, in a case of ecchymoma, the collection of blood does not dissipate readily, and irritation or inflammation is threatened, we must not delay procuring the escape of the blood by a suitable incision made in due time. If there be signs of extravasation and collection of blood in some internal cavity, we should endeavour to ascertain the fact, and to procure the discharge of the blood.

2. *Blood-letting.* With the approbation of all practitioners, we order general and local blood-

letting, abundantly and repeatedly, in every case of concussion, distension, and pressure, in due proportion to the state of the physiological strength of the patient, compared with the severity of the injury, with the little loss of blood that has already taken place, and with the great probability or certainty of the supervention of irritation and inflammation.

Local Remedies. For the removal of the injury, and to favor its resolution, we could wish that surgery would adopt the dry dressings in the derangements of tissues; but, while the custom of applying local dressings continues, we earnestly demand, that there be not applied any thing but water, and the mucilaginous fluids, the blandest of emollients. The oils, probably from becoming soon rancid in contact with the flesh, often prove irritant. The acids, the neutral alkaline salts, and the metallic oxides dissolved in plenty of water, often operate speedily and efficaciously as relaxants, but if there be a disposition to irritation or inflammation, they usually aggravate them and make them to become more considerable, than they would have been without such remedies. The acrid relaxants, the caustics, and all the spirituous or aromatic excitants ought to be banished from practice in these injuries as most pernicious.

Against acute nervous irritation, especially when it proceeds from concussion, with symptoms of torpor or of stupor, and more especially with signs of internal ecchymoma, or effusion of blood, particularly in the head, if there has not appeared any

morbid process, local and general cold baths, and ice itself, are commonly useful; whilst in cases of pains and convulsions, temperate baths, rather cool, are better borne, and have a sedative effect. Against nervous chronic irritation, again, we may employ the strongest relaxants, as sea baths, hot baths, blisters, electricity, magnetism, &c.

For the removal of inflammatory irritation, and especially of local inflammations, not of those diseases of process which succeed the injury, whether of a nervous or inflammatory character, we must employ the usual relaxant method; and the more vigorously, in proportion as the extent of the local injury excites the constitutional affection.

4. *Constitutional remedies.* As in derangements of the tissues, the supervention of diseases of process is more to be apprehended than in wounds; so it will always be proper to employ, from the beginning, the relaxant remedies internally. For this purpose, the neutral alkaline salts, and antimony, are suitable; and more valuable than all others is the usual combination of cream of tartar with tartrite of antimony. These same means are to be continued in case the morbid processes should be already present. Together with all this, it is proper to regulate duly the use of the non-naturals, according to the rules already given in treating of the cure of wounds.

5. *Narcotics.* The narcotic relaxants, as the cynoglossus, cicuta, hyosciamus, digitalis, lauro-cerasus, belladonna, &c. should be freely used in

derangements of the tissues, not less as the best relaxants which can be united to antimony and the neutral salts, than for soothing the pain produced by violent and acute irritation. And if such pain should prove uncontrollable by these sedatives, we earnestly require, that recourse may not be had to opium, without following exactly the rules laid down in chapter XIII. of the first book ; since, in the derangement of tissues, especially when internal, opium or any other excitant is liable to be more injurious, than in cases of simple wounds.

CHAPTER X.

OF SUPPURATION.

Phenomenology. Matter, (*puzza*) and, according to the latin, pus, are the names given to a humour of a particular nature, which is never produced by sound and healthy living processes, but always by a certain disease, which, from its being attended with the production of pus, is called *suppuration*. *Pus vera*, or matter of good quality, is that which in form appears equal and similar in all its parts ; in consistence, unctuous and tenacious, but not coagu-

lable, either by heat or cold; of a white and opaque colour; of a slightly bad smell, peculiar to itself; and of a weak taste, somewhat sweet; mixed with water it does not dissolve, but colours it, and falls to the bottom; but, on shaking the vessel, it immediately swims on the surface. Hence it is apparent, that matter ought to be considered of a bad quality, in proportion as its component parts are less homogeneous, and as it appears either sanguinolent, or sprinkled with any other matter, or mixed with dense filaments, as if from the detachment of mortified parts; as it is thick and heavy in water, or, what is worse, very liquid and soluble; or still worse, when it is rancid, saltish, and of a yellow or green colour, tending to black.

Puriform Humors. Those fluids of the body are called puriform, which, while flowing from organs suffering the disease termed suppuration, retain some appearance of their proper nature, and yet acquire the characters of pus: thus, from the mucus membranes comes the puriform mucus, from the serous the puriform serum, &c. In proportion as these humours are more tenacious, opaque, coloured, foetid, or dissimilar in the form of their several parts, so that they colour water, and some filaments are precipitated to the bottom; so much the more is it proper to regard them as puriform. Sanies and ichor have characters so different, both from pus and from the puriform humours, that we shall treat of them as particular fluids in the following chapter on ulcers.

Lastly, let us observe that good pus, far from having any irritative qualities, is a most bland unguent, provided by nature for covering the suppurating surface. But this same pus, when old, from long retention, as well as any bad matter, puriform humour, ichor, or sanies, always has irritative qualities, and in fact may acquire even caustic properties.

The disease, during which pus is formed, is observed to be always an inflammation of a particular kind. And, with respect to those who pretend to have met with cases, in which pus has been formed without inflammation, every one at the present day regards such cases as either false or ill observed, so that it must be supposed, that, in such cases, either there was not wanting some slight degree of inflammation, or that they were erroneously reported, the pus having been truly produced by an inflammation, but translated by metastasis to another place, where the inflammation has appeared not to exist. In order to treat exactly of the phenomena which inflammation presents when it terminates in suppuration, we shall divide the description of it into five parts.

1. *Of the Inflammation which precedes the suppuration.* Every inflammation whatever, by whatsoever cause produced, whether it be a morbid state, hyperstenic or irritative, or a morbid process, if it does not undergo resolution in proper time, or is not transformed into an obstruction, or congestion; but, either from its intrinsic na-

ture, from the continued operation of the causes that gave rise to it, or from the omission of the necessary sanitary measures, continues in a certain degree of violence, naturally becomes suppurative. For which reason, it will be easily understood, that the signs denoting that an inflammation will terminate in suppuration ought to be the same as those which are peculiar to it, at any time whatever, when, in spite of all the means employed, it persists and increases in degree. It may, again, be foreseen, that suppuration will prove *true* and *laudable*, and that it will give good and true pus, or that it will prove *bad* and *spurious*, producing bad pus or a puriform humour, by an exact observation of the violence, of the nature, and of the particular concurrence of the phenomena of the inflammation, not less than of its seat, of the manner in which it exists, whether diffused or concentrated, and of all the other particulars, of which we shall treat in commenting on inflammatory diseases. As we shall endeavour, in the same place, to enumerate the phenomena, by which to distinguish an inflammation, which, from its peculiar nature, terminates in suppuration so necessarily, that nothing in the world can prevent it, from that other kind of inflammation, in which the suppuration proceeds, not from the nature of the disease, but from the violence of its degree, and in which resolution is not obtained, because means sufficiently resolute have not been employed from the first, or because the inflammation has been too violent to be controlled by any remedy whatever.

Of the inflammation peculiar to suppuration.
Whilst pus is in the act of being formed, pain arises anew in the part, and is felt pulsating, as if from time to time a lancet were pricking or cutting the fibres of the inflamed part, or over the suppurating surface; the heat becomes pungent, the colour very red, and the swelling soft. Besides this, if the matter is not in very small quantity, fever appears, which is continued or remittent, and is attended with cold shiverings, alternating with pungent heat, and followed by sweat, especially in the remissions; the colour of the cheeks, of the parts around the eyes, and of the tongue, is red, violet, or livid; there is thirst, and nausea; the urine is somewhat high coloured and clouded, the pulse frequent and soft, and somewhat undulating. Finally let us observe, that, in this fever, properly suppurative, the strength is rather less oppressed, while there is rather more physiological debility, than in the purely inflammatory fever, which precedes the suppuration; so that, however abundant the food may be, it is but half digested, and the nourishment derived from it is always poor and scarce.

This inflammation, in which particularly pus is produced, may occur alone, without being preceded by that above described as antecedent to suppuration; and this more frequently happens in those cases, in which the disease is either of its own nature suppurative, or where suppuration supervenes upon parts that have been wounded, or

of which the tissues have suffered a derangement, or when the pus, produced in one place, has been translated, and collected in a new place. But what clearly shews this suppurative inflammation to be entirely different from that above-mentioned, which precedes suppuration, is, that when, as is most frequent, both happen in one case, there is an interval of time between the completion of the first, and the commencement of the other, in which the disease is not resolved, but diminished, and entirely suspended.

And, finally, it must be observed, that the suppurative inflammation, as a new morbid process with a necessary course, from the instant it is produced or arises, always increases for a certain time, rapidly or slowly, and with it also increases the pus; until, arrived at its acme, the quantity of pus decreases, the inflammation also diminishing, so that it must necessarily terminate or have an end, as we shall see, either by the restoration of the part, or by degenerating into an ulcer.

3. *Of irritation subsequent to suppuration.* We distinguish two cases of irritation subsequent to suppuration, the one regular and ordinary, the other irregular and malignant.

When the pus is shut up within the flesh, so that it opens a way for itself by corroding the parts, it cannot issue forth unless it naturally occasions an irritation, which, when the pus is of good quality, and the nature of the part not such as to prevent its escape, will always appear regular, and will conti-

nue until the opening for the exit of the pus is completed. And, therefore, it is to be understood, that extraordinary irritation, when present, must always depend upon the pus being too long confined, and causing the irritation, either by its bad qualities, or the obstacle which the nature of the part presents to a free outlet being made.

The constant phenomena of the regular irritation are, the progress of the pus, directed by the shortest line which can be drawn from the centre of the suppuration to the surface of the organ; the corrosion, or, rather, the rupture of the membrane which forms the surface, whether skin, serous, or mucous membrane, follows; and, finally, the discharge of the matter either out of the body, or into some cavity, or into some excrementitious canal, through which it comes forth, mixed with the natural discharges. All this is obtained by a new inflammation; and, truly, there arises a new pain, which is corrosive, a heat which is mordicant, a redness which is erysipelatous, especially when, from being deep seated, the matter has a long way to penetrate; finally, the part, where the opening is to take place, is raised into a point, and then the skin or membrane, rendered very thin and almost transparent, ultimately breaks. Meanwhile, if the suppuration has not been very slight indeed, there is a continued and acute fever, more or less severe at different hours of the day, as the local irritation is more or less mordicant.

Extraordinary irritation, when accompanying suppuration, presents signs of the greatest disturbance which the animal machine can ever suffer, with phenomena proper to the other very severe diseases, which arises from the extreme causticity of the matter, or from the diffusion of the irritation to other organs, or to the whole body, or, finally, from new morbid processes raised up by the irritation itself. The matter, 1. by not being moved, but not stagnating where it is collected, either generates an ulcerated stratum of flesh, and hence there is a pent-up ulcer, or it putrefies, and hence gangrene and death quickly ensue. 2. By being moved irregularly, it enlarges, destroys, and corrodes the flesh, the way opened is tortuous and disadvantageous, and it follows the course into which it is directed, whether by the natural tendency which providentially always is to drive it outwards, or by its own gravity, which necessarily has its influence on a fluid out of the vessels, or where the least resistance is met with, as in the most cellular parts. 3. By passing quietly through the cellular membrane, or by being absorbed, and afterwards deposited again by the lymphatics, or by running some other unknown course, matter may disappear from the place where it was, and appear in another, producing that kind of abscess said to arise by *congestion*, because, with a slight inflammation of the new site, a collection of matter, which was generated in another place, makes its appearance; and 4. Lastly, being absorbed and diffused in the

blood, if it is not separated and discharged with the other excrementitious matters, it produces death, after having caused a general decay or wasting of the whole body. In these sad cases, diseases of all sorts, acute and chronic, both morbid states and morbid processes, may take place; for example, nervous diseases, as tetanus, epilepsy, apoplexy, &c. fevers, as the ardent, the bilious, the lymphatic, the hectic, the inflammatory, as the acute and chronic hepatitis, pneumonia, and neuritides, &c. &c. In which diseases there never can be any hope of preserving life, unless the matter, as a humor incapable of assimilation, has, in the first place, been naturally or artificially expelled from the body.

4. *Of abscess and of empyema.* In the present day, the words *abscess* and *empyema* are not otherwise commonly employed, than to indicate that suppuration in which the matter is hidden within a certain cavity, which is formed in the cellular substance of some part. From all that we have said of suppuration, the phenomena of abscess will be understood. 1. If the first inflammation should have occurred, which, as we said, might, or might not be the case, it always precedes, and if, after having completed its course, and having had some time for subsiding, it does not give place to the other to arise, 2. the second inflammation is never wanting, whether it comes alone, or after the other. 3. If it be impossible to discharge the matter artificially, or if this should have been omitted, the irritation arises, which we called consequent. 4. If

the matter opens to itself a way, the consequences are various, according as it either comes forth, or discharges itself into some cavity, or into some excrementitious canal. 5. If the matter itself suffers either stagnation, or absorption, or translation, there succeed those dreadful diseases which we have already mentioned, and death. 6. If, lastly, before there arises any disease of process, the matter be driven entirely out of the body, resolution of the suppuration immediately takes place, with phenomena which we shall presently describe.

If an unripe abscess which ought to suppurate, be cut, a cavity will not be found, which is only formed as the matter is generated ; but the flesh will appear whole, red, gorged with blood, and the blood light coloured. And, therefore, the circumscription and softness of the inflamed part, together with the other phenomena above described, proper to the production of pus, indicate that the abscess is going on to maturity. When the pus is already formed, there is felt a sense of itching in the neighbourhood, and of weight within the tumor. Finally, in external abscesses, the passive undulation which the surgeon perceives on feeling the swelling, is to be considered as a pathognomonic sign of the maturity of the abscess.

An abscess, in coming to a head, has the skin elevated into a point in the place, corresponding to the centre of the abscess, where the opening will take place : the skin at the elevated point becomes thinner, colourless, and almost diaphanous : and if

the abscess be very deep, there often appears in the same place a redness, having a resemblance to erysipelas. From this Hippocrates drew the signs for distinguishing the good or bad nature of an apostem, deeming it good to have the point elevated, soft, and thin, and bad to have the same hard, depressed, and divided or double.

For the present we shall, with many of the ancients, employ the term *empyema*, to signify a collection of matter, in whatever cavity of the body, although in another place we shall, with the moderns, use this same word to indicate a collection of matter in the cavity of the chest. We divide the phenomena of *empyema* into three classes; 1. the *antecedents* are those common to an abscess, to an inflamed, suppurated, or ruptured organ, to a suppurative inflammation of the serous membranes which invest cavities, or to an internal wound that has suppurated. 2. The *concomitants* are those symptoms which are usual in a supuration, which arise from the irritation produced by the stagnation of the matter, and those peculiar to the collection of matter in that particular cavity where the puriform humor is collected, and is ordinarily found loose as a dropsical collection. 3. The phenomena *subsequent* to *empyema*, represent the resolution of the supuration, when, as very rarely happens, an opening is fortunately made by art or by nature; but, most frequently, they present only those most pernicious diseases which arise from matter being pent up. If these symp-

toms have already been manifested, it would be useless to make an opening, because the viscera of the cavity in which the empyema is situated, being tainted, death must quickly supervene.

Of the resolution and of the degeneration of suppuration. We term resolution of suppuration, the regular declension of the suppurative process, which is succeeded by the complete and perfect healing of the suppurated part; and we term degeneration of suppuration, that change which takes place, when a suppuration runs either into ulcer or gangrene, of which we shall treat in the following chapter. The conditions necessary to the resolution of the suppurative process are these:—1. That the first inflammation, if it ever existed, complete regularly its course. 2. That the second inflammation, properly suppurative, be the most simple, and not at all malignant, that is, that it keep the parts slightly and regularly inflamed, without congestion, without obstruction, and without the production either of callus, fungus, or schirrhus, &c. 3. That the irritation consequent to the formation of the pus do not take place, either from the matter having escaped in due time, by natural or artificial openings, or that this irritation be slight, short, and adequate to procure such an opening.

Now it is necessary to remember, as we said of wounds, that the healing of a part after suppuration is an operation of nature which cannot fail, unless the due course of the above mentioned conditions be disturbed. We further add, that the con-

currence of such conditions in every suppuration is so natural that they cannot be wanting, except from causes foreign to the disease. For which reason, the two following maxims must be considered as certain :—1. That to procure the resolution of a suppuration, and of course the healing of the part, art should not interfere further, than to remove whatever might impede the natural concurrence of the aforesaid conditions. 2. That the bad management of the suppurated part, the errors or the diseased habits of the patient, and the stagnation of the pus, are the causes, that, acting separately or together, by preventing the resolution of the suppurative process, and hence by preventing the healing, effect the degeneration of the suppuration, either into an ulcer or into gangrene.

Pathological etiology. 1. Of what particular nature is the inflammation which precedes the suppuration? The ancients, and principally Boerhaave, perhaps from considering, that that inflammation which supervenes on parts wounded, or which have suffered derangement of their tissues, is always suppurative, believed, that inflammation may become a cause of suppuration, when, by distending, pressing, or breaking the most minute vessels, it produces a wound, or a derangement of tissues, in the interior of a part.

Among the moderns, another opinion is more commonly entertained, that inflammation causes an effusion of coagulable lymph in the cellular tissue of the inflamed part; that when such lymph

happens fortunately to be absorbed, resolution of the inflammation takes place; that, when it remains coagulated, or indurated, it is changed into obstruction; and that, when it is changed and degenerated into pus, suppuration takes place.

Those who adopt the opinion of the moderns, ought not to forget that of the ancients, because it is not repugnant to unite the two together; whereby an error (and not a slight one) of the moderns may be corrected, and whence may be deduced a very just maxim of the ancient practice. According to Brown, the violence or great degree of inflammation is the sole cause of suppuration ensuing; but it might with more justice be said, that the super-vention of suppuration depends, not more upon the degree, than upon the nature of the inflammation itself. And, in truth, it is clear, that, in proportion as inflammation is impetuous, the greater is the alteration and derangement of the texture of the part; in like manner as it frequently may be observed, that furuncular inflammations, however they may seem slight or trivial in degree, like a slight pustule, yet are of such a nature, that they inclose within their centre a piece of the substance of the body already deranged in its texture, which affords a satisfactory explanation of their uniformly and necessarily terminating in suppuration. The consequence is, that, among the moderns, art is supposed to possess the power of being able always to prevent suppuration, if, on the rise of inflammation, means sufficiently active be employed to procure

resolution: but the ancients, more modestly and correctly, did not believe the power of medicine to be of so much value. The great Boerhaave, in his 402d aphorism, (pointing out the means to be used for preventing inflammation from running into suppuration) ingeniously says, “*His frustra, non, aut sero, paratis, inflammatio in suppurationem vergit.*” For which reason, in treating of inflammatory diseases particularly, although we shall never exculpate any practitioner that should omit, in any one of these diseases, to use promptly, and with sufficient activity, the proper relaxant means for the purpose of procuring resolution, we shall always admit that inflammations, so violent in degree that the most powerful means of art have no effect in controlling them, and inflammations, of such a nature that, in arising, whatever may be their degree, they so effectually produce derangement of the inflamed texture, that no remedy can avail to prevent it, must inevitably terminate otherwise than in resolution.

It must be concluded from this argument, that the violence and nature of the first inflammation ought to be considered as the efficient causes of suppuration, and the omission of the prompt, sufficient, and regular means for procuring resolution, as occasional causes of the same.

2. What is the particular nature of the inflammation, properly termed suppurative? We shall employ no great labour in shewing that such inflammation is truly a morbid process, and that,

however various its properties may be, it is always of an hypersthenic nature.

At first sight it might seem, that suppurative inflammation, by occupying wounded parts, ought to be, not a morbid process, but an irritative state; but, although we are of opinion that a certain irritation always exists when the integrity of a part is interrupted, yet we have been led to the conclusion, that the inflammation, by which pus is produced, is a disease of process, by the following reasons.

1. It is well known that suppuration does not supervene either upon violent injuries or upon the preceding inflammations so immediately, as is peculiar to irritations; but arises, after the lapse of some time, even when, to an inexperienced person, the disease seems to be on the decline; which shews that the disease must, in the first place, have been stopped, and then arisen again, as a new morbid process.
2. The suppurative process having arisen, of necessity increases for some time, until it has produced a quantity of matter corresponding to the greatness of the injury, and follows a course so inevitable, that it must be inherent in the nature of the process; and it may be observed that nothing in the world can change this course, but only render it more or less violent.
3. The suppurative process having reached its height, it spontaneously decreases, the quantity of the matter goes on diminishing, and gives place to the natural power by which parts are formed, and by which the healing is effected. Such a fixed determina-

tion shows it to be of the essence of the suppurative process, not to admit of being disturbed, except by extraneous causes, and never, as we observed, by any thing inherent in the process itself.

The constantly hypersthenic nature of every suppuration deserves a more extended demonstration, as Brown has maintained that it must always be hyposthenic, resting so extraordinary an assertion on the futile arguments, that the organization of the parts is found broken or wounded, and the physiological strength of the patient depressed, while the impetus of the primitive inflammation has vanished. And some of the most modern writers, by distinguishing suppuration into violent or hot, and slow, which is erroneously called cold, admit that the violent may be hypersthenic, but pretend that the slow, for which, in fact, the most powerful relaxant means are required, should be considered as hyposthenic. For these reasons it is necessary that we, in order clearly to demonstrate the constantly hypersthenic nature of suppuration, especially of the slow, should employ the clearest practical arguments, such as are those that we shall draw from that regimen of the non-naturals, which is usually prescribed for those affected with suppuration ; considering it as certain, that there never ought nor can be safely employed, any therapeutic means which are in opposition to the dietetic means.

Men, when guided by experience and common sense, have never applied to the parts where the matter of suppuration is produced, any other

than vegetable substances, mucilaginous, humid and tepid ; and, with a view to accelerate the suppurative process when it is slow, they have added fermented farinaceous substances, saccharine acidulous pulps, rancid oils and resins. The virtues of these substances, always manifestly relaxant, shews at once, both the hyperstenic nature of inflammation in general, and that the hypersthenia is greater in the slow suppurations : further, by the principles explained in the case of inflammation in general, we can well explain why the last mentioned means, which are more powerfully relaxant, have become most hurtful when, from being used injudiciously and immoderately, they have been made to act as irritants. In like manner, we may observe, that a temperate and relaxant regimen is commonly adopted and required by those affected with suppuration, a more full diet is in fact employed than that observed in the first inflammation, but, as to the abundance of roasted meat and wine which the Brownonians order, there is not a patient who does not decline them and prefer plain soup or milk : moreover, they both procure for themselves rest for the affected part, and abstain, as much as they can, from all motion of the body, seeking country air, humid and fresh, &c. &c. To all this, the ancients wisely united the relaxant remedies, whenever they saw them required by the constitutional cause of the disease, which, for this reason, they called correctives, alteratives, depuratives, &c. thus leaving the course of the suppu-

rative process free, and procuring at the same time the diminution of the heat, thirst, redness, and density of the excretions; and, in a word, a reduction of the fever.

But have bark, opium, or aromatic medicines, whether administered internally or applied locally, ever been employed alone? We say no, never. The Brownonians themselves have always qualified and combined them with the aforesaid emollients and relaxants. Now, that human reason is emancipated from the delirium into which it was thrown by every ill-conceived hypothesis, can it ever consider, as beneficial, a remedy, which requires the union of one of a contrary nature to combat its efficacy, and prevent it from doing harm?

And what is the effect of opium, bark, and aromatics, in suppuration? They overheat, and, as we observed in chapter VII. of this book, by dispersing the thinner part of the humours, they render the surface dry, all the fluids dense and thick, and the excretions visibly so. Thus they render the nature of the matter more dense, and lessen its quantity. All this, although accompanied with an increase of the velocity and tension of the pulse, of the fever, of the dryness, and redness of the surface, with thirst, thickening of the urine, and other excretions, used to be considered by the Brownonians not as bad, but good effects of the excitants employed: and as, notwithstanding this, in ninety out of one hundred cases of regular suppuration, the natural powers, although

disturbed, still effect the healing, the fallacy of such a practice must be added to the distortions produced by hypothesis in the human mind, which being blinded, perceives, that in ten other cases, where this practice is pursued, suppurations degenerate which might have otherwise observed a regular course, nor attributes to the just cause, the miserable result inevitably produced in every suppuration that is already inclined to degenerate.

3. Is pus ever to be considered as a putrid humour? Hippocrates distinguished the humours into three sorts: to wit, the good and natural, which are produced by healthy organs; the morbid, which are prepared by diseased organs; and the dead, which arise in the dead substance. Now, whether it may be from defect of language or other causes, he has often used the word *putrid* to designate the morbid as well as the dead humors. Galen, in order to prevent the errors which might arise from this, distinguishes two kinds of putrid humours, saying, "*Alterum nempe fieri vincente natura, alterum vero natura devicta.*" Those humours, which are produced by suppurative diseases, he considered as arising from nature when she prevailed, which imports as much as if he had said, in our language, from the natural powers, which, although weak, are still in life, and therefore capable of overcoming the natural affinity of the elements, and of conferring, by the process of assimilation, a particular nature on other substances: and those humours, which arise after death, he con-

sidered as arising from nature when overcome, because, every vital natural power being absent, they are composed according to the natural order of their affinities. But the humoralists of more modern times, by supposing the purulent humours, because they arise from a weak natural power, to be more allied to the putrid than to the healthy humours, and by supposing that art possessed the means of correcting the tendency of the humours to putrefaction, persuaded themselves that their supposed antiseptics might also be anti-purulents; and having foolishly admitted that bark, bitters, aromatics, and alcoholic fluids, when administered internally, possess an antiseptic power, they were led to believe that these excitants, and especially the bark, were also anti-purulents. By the mass of errors thus accumulated, the Brownonians found already neglected, as well as forgotten, the ancient caution against the use of excitants in suppuration. To the humoralists and Brownonians, the multitude of empirics, who always abound, are united, and things are come to such a pass in the present day, that they usually employ in suppurations, especially such as are slow, the bark and the excitants, without wishing either to give or receive any reason, theoretical or practical.

“After the few, and not the vulgar sort,” we hold pus to be a product of a morbid inflammatory process, always hyperstenic, and supervening in parts whose continuity has sustained an injury. The question might be agitated, whether pus be produced within or without the vessels. The opi-

nion of Hunter is very similar to that of Hippocrates, that the pus is produced by the vessels, and, vitally, within the vessels themselves. It is more generally taught at the present day, that coagulable lymph is effused from the vessels as matter which is to become pus, and that it becomes so by the ordinary chemical affinities, regulated by the heat and the humidity of the suppurating surfaces. To us, although not obliged to choose one or the other of these opinions, every one will understand why the first, that of Hippocrates or of Hunter, ought to be the more agreeable, which, making the pus to arise from a particular morbid process, serves to confirm the maxim, that there is no other way to correct the quality of the matter, and to diminish its quantity, except by inducing a resolution of the morbid process of the suppurating substance, and thus rendering it healthy.

After all this it will be understood, how wisely the ancients considered pus, when newly produced, and of good quality, such as is usually the case in regular suppurations, as the most bland unguent with which nature, anointing the suppurating flesh, diminishes the irritation arising from the solution of continuity; and matter originally bad, or become such by being old, it will easily be understood, must be the cause of those irritative diseases and of those new morbid processes, of which we have treated.

Diagnosis. Suppurations in general, and especially those of the exterior which are presented to

the senses, are easily recognized; but, in certain cases, especially in suppurations when internal and pent up, the diagnosis may be more difficult than in any other disease. We shall here note those cases in which the diagnosis becomes necessarily difficult, leaving the particular circumstances to be explained when we come to treat of particular diseases.

1. It is a most difficult thing to determine regarding an inflammation, whether resolution may still be procured, or whether, from having already produced the internal derangement of textures, it must necessarily suppurate. In order to approximate the truth, in giving our opinion, it is necessary to consider, 1. The quality of the inflammation, whether it form a nucleus or not. 2. The degree of it, whether sufficiently violent. 3. The duration of the same, and, more especially, whether, after the fourth day, it continues sharp, violent, and increasing. 4. The means used, whether they have been sufficient, sufficiently active, and applied in due season or not.

2. When the impetus of the first inflammation is diminished, the great alleviation which the patient experiences, especially in internal inflammatory diseases, renders it difficult to be seen, whether a derangement of tissues in the internal organ has been produced, and, therefore, whether the suppurative process is to arise. This is the reason why, in judging of acute, inflammatory, and febrile diseases, we should not be satisfied with superficially observing, whether those general conditions,

already explained in chapter VII, concur in the diminution of the disease, any more than the more particular ones which we shall speak of in the proper place, in order to determine whether the true resolution of the disease itself is taking place, because an imminent suppuration, or one already commenced, cannot be recognized otherwise than by the want of one or more of the conditions of the resolution, or by the presence of some sign of lesion of the affected organ.

During the course of a suppuration, it may nevertheless remain hid, by occupying internal organs of little sensibility, proceeding with great slowness, exhibiting very slight and fugaceous suppurative symptoms, and presenting slight and imperceptible obstacles to the function of the affected organ; so that the disease at length comes to be known to be suppurative, either when it has obtained an acute aggrandizement, when it has degenerated into a wasting of the body, or, unhappily, only when the body comes to be opened after death.

4. Suppuration having taken place, if the pus be situated in an internal organ, shut up on all sides; if it be not of a very irritating nature; if the part be not very sensible; if the function of the affected organ sustain little or no observable injury, and if the diminution of the phenomena peculiar to the suppurative process be considerable, before irritation arises; in any case, where great attention has not been paid to distinguish that the

disease has not been moderated by true resolution, a vomica remains unknown, which one day or other must produce irritative diseases, morbid processes, an empyema, or gangrene, and sudden death, as we have said above.

5. The diseases that succeed to suppuration are easily known, when the course of the inflammatory process, and the suppuration preceding, has been observed; and their irritative nature, or the nature of the new process is distinguished, by observing whether they have or have not acquired a necessary course.

Prognosis. In order to give the most exact prognosis in suppuratory diseases, it is necessary, in the first place, to observe, whether there be difficulties and uncertainty in the diagnosis; and afterwards, calculating, according to the usual rules explained in chapter xv of the first book, and according to the particular phenomena indicating the special nature of the disease, what and how much danger exists in the interruption of the continuity, in the morbid process, and in the irritation proper to the suppuration; we may announce whether the disease shall have a fortunate termination by healing, or an unfortunate one by degenerating into an ulcer, or into any specific disease, or by running on to gangrene and death.

We have lastly to note, that he would err who should believe, with the vulgar, that there are organs indisposed to healing, as the lungs, the lesions of which, they would have it believed, do not

admit of healing, because of their being in continual motion, and exposed to the contact of the air. Wherever a collection of matter exists, if the disease has had a regular and laudable process; if the pus be all discharged in proper time; if extraneous bodies, as excrementitious substances, do not impede the union, and, finally, if the general causes already noticed, which are also extraneous, do not prevent the resolution of the disease, the vital powers cannot fail to effect it.

Specific Cure. A specific remedy seasonably used in the inflammation which precedes suppuration, when derangement of the tissues is not yet produced, may effect resolution by preventing the imminent suppuration: but, if the derangement of the tissues be produced, whether from the nature of the inflammation, or from an omission on the part of the person who has charge of the patient, the suppurative process must invariably rise, and run its course in a manner and degree proportioned to the severity of the lesion sustained; unless the specific remedy, as the best effect it can produce, by restoring the integrity and health of the substance around the suppuration, puts the suppurative process into a favorable course, by which the healing is forwarded. Examples of this present themselves every day, in syphilitic suppurations, when treated with mercury.

Minorative Cure. A principle thus established in regard to the specific cure, renders manifest what ought to be the minorative cure of suppura-

tion in those cases, which are the majority, where no specific remedy is known ; wherefore the debilitating means, however necessary they may be in the first place before the inflammation has produced derangement of the tissues, are the more ineffacious when the derangement is already established. And, therefore, the relaxant remedies must be used, while an opportunity offers for reducing the greatness of the suppuration, or preventing it from degenerating into an ulcer, for dissipating the residue of the constitutional disease which might have produced the suppuration, for correcting any morbid habit of body, or, finally, for facilitating the evacuation of the pus: but in the regular and simple suppurations, it is proper to commit the whole work to nature, ordering a good diet, and no pharmaceutical remedy.

With respect to the diet which is suitable, we certainly should not unnecessarily enfeeble the strength of the patient ; on the contrary, food, exercise, and personal activity, should be recommended, as far as may appear necessary for restoring the physiological strength, without producing a bad effect on the suppurative process.

Palliative and Prophylactic Cure. From all that we have said above, it is concluded, that it is always contrary to reason to make use of excitant remedies in suppurations ; but yet, if ever from any adventitious phenomena, or from the complication of other diseases, they should be required, the suppurative process being, as it often is, so regular and

simple as not be in danger of being deteriorated; no one certainly would in such a case reject their use.

Management of the part. By considering a suppurating part as already injured, every one sees; that to remedy it, the same course ought to be pursued that we explained in relation to derangement of the tissues. 2. In external inflammations, when threatening to suppurate, if it be desired to procure resolution, and if a metastasis be not apprehended, temperate baths and fresh air are to be used, as well as mucilaginous substances, either rendered more relaxant by means of some acrid vegetable, or some acid, or salt, or metallic oxyde: if, again, it be desired to induce quickly the termination, whether resolution or suppuration, emollient tepid cataplasms are to be used, and, if it be desired to procure suppuration rather than resolution, or, if it be wished to accelerate the course of suppuration, saccharine substances, rancid oils, the gum resins in form of plasters, and acrid vegetable substances, as the onion boiled, spandillo ointment, or that of the white lily, &c. are to be used, and often combined with warm cataplasms. 4. In general it is preferred, that the abscesses should have a natural, rather than an artificial aperture, provided this takes place quickly, easily and regularly: but, where any one of these conditions is wanting, an artificial aperture is to be preferred; and, if an artificial aperture admit of being short, easy, and regular, and the patient has courage to prefer this, rather than wait for a late natural aperture, an

opening should be made. 3. The time for making an aperture ought to be, between the period when the abscess attains complete maturity, until which it would be proper to delay the opening, and the period when serious consequences are apprehended, which render an early opening expedient. 6. In empyema well ascertained, or explored, an artificial aperture is sometimes made with advantage, but, if there should have already appeared those diseases which indicate the beginning of degeneration, the making an opening then would only be a uselese infliction of pain and hastening of death. 7. Surgery ought to interdict for ever the employment of caustics, and should use nothing but cutting instruments for opening abscesses. 8. As the evacuation of an abscess is more natural when it takes place gradually, it is to be preferred in order that the air may not enter the cavity and be detained there, and because, when discharged in this manner, there is the less need of tents. 9. In internal inflammations, which threaten suppuration, after having diminished the first impetus of the disease by phlebotomy, it is commonly considered advantageous, at the present day, to apply a blister over the part where the organ affected is situated, leaving it open for the whole time that the suppuratory process continues. 10. In the regular termination of suppurations, nature never allows the healing of the part to be wanting, wherefore, when it does not take place, the disease ought to be regarded as an ulcer, and treated accordingly.

Maturatives and attractives. Although the ancients may have known, that the production and discharge of pus was entirely a work of nature, yet they used the thin relaxant agents as capable of favoring suppuration, and of rendering it more regular; as the excitants are either of dissipating the disease, or causing the suppuration to degenerate. The modern theory furnishes the true demonstration of this maxim.

CHAPTER XI.

OF ULCERS.

Phenomenology. Every solution of continuity of the living body, distinguished from a wound by not being bloody or recent, and from a suppuration, by discharging an altered matter, and being prevented by some obstacle from undergoing a spontaneous cure, is called a sore or ulcer. In order clearly to explain the distinctions of ulcers, we shall describe them as follows. 1. *Distinctions of ulcers derived from an obstacle to healing.* When we consider, as in this chapter it will appear, that the continuance of an ulcer cannot depend upon any

cause but an obstacle to the renewal of the continuity, it is manifest that the natural power of forming parts, which we discussed in the foregoing chapter, is not inclined spontaneously to complete the healing of all lesions whatever.

There are three kind of obstacles to healing, which explains the reason, that there are so many denominations given to ulcers, and derived from such obstacles. *Ulcers from irritation*, we shall call those, which are prevented from healing, from containing some body so situated, that it prevents the approach of their margins, or from the natural power of forming parts belonging to their substance being disturbed by some irritative agent, or from suffering not irritation, so much as a derangement of the tissues, as in burns, so that any intermediate bodies, and every irritating cause, being removed, and the derangement of tissues, if it has existed, resolved, the irritation ceases, and the healing of such ulcers immediately proceeds. *Ulcers from morbid processes*, we shall name those, which have over the ulcerated surface a stratum of flesh, called *ulcerous*, because it suffers not that simple and regular suppurative process, which spontaneously undergoes resolution, and gives place to healing, but either a slow inflammation, or a soft congestion, or a hard and callous obstruction, and is often attended by varices, or œdema, or other affections of the like sort. In these circumstances, the natural power of forming parts, from it's own intrinsic weakness, and the obstacles which retard the approach of the margins

of the ulcer, far from effecting a cure, produces rather a still greater separation of the parts. Besides this, from sustaining at once the solution of continuity, and the obstinacy of the morbid process, these ulcers are never without a certain degree of irritation, which, although all the above causes of irritation may be wanting, produces such a corrupt matter, that the ulcerous surface itself is injured by it. *Ulcers by origin*, we call those, over which there grows one of those morbid substances which, from not having a natural texture, we observed to be not susceptible of resolution; and, therefore, those sores are called schirrous, fungous, &c. according as the substance growing over them is of the nature of schirrous or fungous, &c. In such sores, the obstacles to healing are, 1. The morbid growth, acting as a malignant irritative cause, and as a stoppage to the approach of the margins. 2. That morbid process of inflammation, or obstruction, or congestion, from which the growth or production derives its origin and increase; and, 3. The irritations occasioned by the solution of continuity, by the morbid growth, by the ulcerous matter, or by any intermediate body, whether an irritative agent, or a derangement of the tissues.

Finally, *ulcerated productions*, as true cancers, fungi, polypi, &c. already open and degenerated; but these lesions must be considered, rather as malignant and corroding degenerations, than merely as ulcers, as we shall explain in treating of them particularly. The irritative causes being removed, the ulcerative

process having undergone resolution, and the morbid growth being cut off by the roots, the solution of continuity ceases to be an ulcer, and is converted into a simple suppuration, which, after having completed its course, gives place to the natural power of forming parts, which is now restored to a healthy state, and effects the healing of the lesion.

Now, the simple and regular suppuration induced in a wound by the removal of its causes, is called *simple ulcer* by the surgeons of the present day, and, therefore, it is established as a maxim, that *no ulcer can heal, unless, in the first place, it be rendered simple*; which maxim Hippocrates propounds with rather more truth, when he says, that the margins of an ulcer, “*Coire non possunt, nisi circumstantes ulceris carnes SANAS effeceris.*”

2. *Distinctions of ulcers derived from their figure or form.* *Open ulcers* are those in which the ulcerated substance is entirely exposed in any surface whatever, whether external, or belonging to an internal organ. A *fistula* is a cavernous sore, which has an opening outwards, whence, by inverting the part, or by pressure, matter is made to issue, and, by a direct or tortuous course, proceeds from an ulcerated substance internally situated. *Shut ulcers*, as it seems to us, are those *abscesses*, which are usually termed *malignant*, because their suppurated substance has not a regular and simple suppurative process, but, either from being irritated, or from suffering a morbid ulcerative process, or from enclosing within them a mor-

bid growth, whether schirrous, fungous, &c. they are found to possess the true nature of an ulcer; in fact, the ulceration is manifested as soon as such abscesses are opened, whether by mistake, or by their unhappily bursting spontaneously.

The situation and form present no obstacle to the healing of an ulcer, except that of rendering more or less difficult the discharge of the matter; but the true and efficient obstacle depends upon the nature of the disease, whether it be irritative, or one of process, or of morbid growth, which is suffered by the ulcerated substance: in fact, when the substance is restored to a healthy state, the margins brought near, and the matter not detained, be the ulcer what it may, and whatever may be its form, the healing is, in a short time, effected. If not, it is to be considered that such fistulas reach to some bone, which is, in like manner, affected with suppuration or caries, so that the healing cannot be effected, unless in the first place the very tedious disease affecting the bone be cured.

Distinctions of ulcers derived from the direction which they take. Those ulcers are called *stationary*, which neither increase nor diminish, nor remove from the place where they commenced. Those are called *creeping* ulcers which, by little and little, or suddenly, by occupying another place, leave healed the substance first affected by them. Those are called *depascent* which, observing the same rule, increase in extent or become more malignant in their nature.

4. *Distinctions of Ulcers derived from the nature of the matter discharged.* Ulcers are properly said to be *purulent*, which discharge nothing but pus, although it may be of bad quality. *Crustaceous* ulcers are those which are covered with a concretion of matter, or hard substance, which forms a crust, under which lies the fluid matter, more or less corrupt, and sometimes mixed with worms. *Sanious* ulcers are those which discharge *sanies*, that is, a humor entirely fluid, soluble in water, dirty yellowish, dirty greenish, or sanguinolent, acrid, and foetid. *Ichorous* ulcers are those which discharge *ichor*, that is, a humor liquid like sanies, but rather more clear and less corrupted. Let us observe, that purulent ulcers are most frequently the result of irritation, or of a simple ulcerative process; and that sanious or ichorous ulcers are almost constantly of that class which have their substance either schirrous, or fungous, or complicated by the proximity of a diseased bone, or with some malignant growth.

Pathological etiology. Any ulcer may arise of itself, by destroying and undermining the substance with itching, or with slight pain; or may come on after a solution of continuity has been made, whether by a wound, by a derangement of the tissues, by burning, by abscess, or by gangrene.

The causes proper to ulcers are, 1. all the material irritants, whether those produced in the body, as the excrementitious substances, or cor-

rupt humors which the ulcers themselves discharge, or hurtful things either applied or detained; 2. all organic vices, as ossification of the vessels, varices, aneurisms, œdematous swellings, local loss of substance, &c.; 3. any bad regulation, which the patient may have pursued in the use of those things commonly used to sustain life, which, when hurtful, powerfully tend to keep the vital force in a state whereby it is disabled from preserving the various parts of the body in healthy union; 4. any morbid habit whatever, as the milk eruptions, herpes, scabies, syphilis, rickets, scrophula, the gout, hæmorrhoids, retrocession of the milk, &c. of which we shall have occasion to reason particularly; 5. finally, those causes, not yet known, from which parasite growths arise in the living body, and more especially over wounds.

From all this, every one may see that ulcers may continue, either from constitutional causes, which keep the whole body inflamed, or from local causes, which keep a particular part separated not less than inflamed. With respect to the proximate cause of ulcers, it would be tedious to go round about for proof, that the vital power sustains either irritation or hypersténia, and never hyposténia. Wherefore we observe briefly only; 1. That in ulcers, from the substance being weakened, either slightly inflamed, or obstructed, or in a state of congestion, the hypersténia and the irritation must, for the reasons already many times assigned, especially in the chapter on inflamma-

tion, be considered greater than is proper to a simple and regular suppuration, and therefore requiring the relaxant method more efficaciously enforced. 2. That, in fact, the most ancient and most common cure of ulcers is composed of relaxant means. 3. That, in no case, have the Brownonians employed excitants alone for curing ulcers, but have incongruously mixed them with the already acknowledged relaxants; and certainly they would have discovered the sad effects of their medication, if the relaxants, which they still used, had not frequently overcome at once the cause of the ulcer, and the bad effects of their excitants.

As the effects of every ulcer, we observe, 1. A certain degree of physiological debility, especially in cases where there may have been great losses, whether of blood or of the ulcerous matter, and where the digestive functions have become defective. 2. The irritation of the part and of the whole body, proceeding necessarily from a certain absorption of ulcerous matter, but still more from the solution of continuity, which has the same effect as we observed in speaking of wounds. 3. All the diseases, febrile, inflammatory, nervous, &c. acute and chronic, not less than gangrene and death; which may arise from the degeneration, or from the transmutation of the place of the ulcer. 4. Finally, cachexia and tabes, which as causes, accompaniment, or effects, are never wanting in internal ulcers, and often also in the external.

Diagnosis. External ulcers being before our

eyes, and capable of being touched with our fingers, or with the probe, are to be known by their proper phenomena ; but there is no little difficulty in recognizing internal ulcers, in those same cases precisely in which it is difficult to detect internal suppurations. Nevertheless, an internal organ must be believed to be already occupied when it appears to suffer injury from a suppurative process, which, having become chronic, is obstinately kept up. The nature, again, of an internal ulcer, whether it be susceptible of resolution or not, must be investigated not from the constitutional symptoms, but from the phenomena peculiar to the particular disease, as will be seen in the proper place.

Prognosis. Ulcers, when kept up by an irritation, or by a simple morbid process, are not curable, except when it is possible to remove the obstacles to the cure, nor ought they of themselves to prove mortal, unless when they are either ill treated, or when, from being unable to overcome the obstacles, they degenerate. The danger, therefore, of those ulcers, ought to be estimated from the extent of the injury, and from the importance of the organ affected, in like manner as we said of wounds.

Ulcers with morbid growths, and the growths themselves, are not susceptible of resolution, but malignant wasters of the body ; and therefore, when internal, they constitute incurable and mortal diseases ; and when external, they prove equally so, when, as is often the case, it would be injudicious for a surgeon to meddle with them.

Cure. Before we enter upon the cure of ulcers, an old question presents itself to our consideration, which is still pending, namely, *whether it be proper or not to procure the healing of an external wound, which does not threaten to degenerate.* We have thought proper to present the question in these terms, in order that every one might understand, that not an instant ought to be lost in attempting the cure of internal ulcers, and even of external ones, when, from the importance of the situation which they occupy, from the form of the lesion, or from the possibility of its becoming malignant, it might prove fatal. By many authors, very deserving of credit, we are enjoined not to close up external ulcers of the common kind; and the propriety of this injunction is confirmed by our own experience: because there may afterwards arise some kind of severe disease, instead of a metastasis of the ulcerative process. Nevertheless we admit, with the consent of the same authors, that such an injunction ought to have some exceptions. Wherefore, in treating this question, judging it superfluous to adduce any proof of the aforesaid principle, we shall endeavour to determine precisely when an exception to it ought to be allowed.

Many authors would have it believed, that the constitution, from suffering an ulcer, contracts in time such a habit that, when freed from the ulcer, it declines, languishes in health, and at length perishes. But is it possible that time alone could

create such a habit, that the body should not be able to exist unless under the operation of another force?

We believe it to be certain that there are some morbid habits, as the milk eruption, herpes, those arising from the retropulsion of the milk, of the exanthemata, and of other humours, of which we shall speak in the proper place, which, from being naturally prone to metastasis as to the part occupied, and to conversion into another form of disease, are counterbalanced by ulcers, which, by concentrating all their morbid processes, under the ulcerative form, allow the patient to enjoy life without any other manifestation of his disease. And, therefore, in such diseases, far from permitting the ulcers to be closed by art, when they are open either by accident, or in consequence of the same disease, we would advise, in case they should not exist, that they be made, and, when threatening on any occasion a malignant degeneration, we grant that they may be medicated, so as to be restored to a harmless state, but never healed. On the contrary, those ulcers, which exist in bodies, which either do not suffer from any morbid habit, or are affected with it of such a nature as to derive no advantage from the existence of an ulcer, as is the case with syphilis, no one can deny that they may, nay, rather that they ought to be healed.

After this first reason, which is entirely pathological, the second, which is entirely physiological, and regards the habit, ought to be taken into

consideration, by respecting those old ulcers which it is not proper to close, more than recent sores which may be closed with safety.

General method of cure. The cure of these sores, which it is desirable perfectly to close, as well as of those which must be kept open but harmless, ought to be considered the same, and varies only in the particular management of the part. To complete such a cure, it is necessary to attend to all that we have described as useful to the other lesions, with the following additions ; 1. Every morbid cause, and especially if it should be irritative, which can be removed, or subdued by any specific remedy, is by all means to be taken away, or quickly destroyed. 2. When specific means are wanting, the common relaxant means are to be employed ; but with such prudence, that neither by their violence, nor by reducing too low the dietetic means, there should be produced a physiological debility unnecessarily great. 3. When there exists a morbid habit, we must not omit to take proper care of it, although the ulcer might have arisen, or be sustained by quite another cause, because, by correcting the bad habit prevailing in the body, the ulcer is improved, and the same bad habit, which concurred with other causes to make it worse, or which might do so, is removed or prevented. 4. If ever there should be symptoms, or adventitious diseases of such a nature as to require an excitant method of cure, it is a very rare thing that the ulcer is found so much irritated or inflamed, that the use of them ought to

be prohibited : but they are to be used with the caution of suspending them as soon as the necessity for them has ceased.

Management of an Ulcer for cure. Rest, protecting the injured part, and, above all, cleanliness, are the first most powerful means for the cure of an ulcer, wherefore the dressings ought to be as frequent as they can be without producing irritation. 2. All irritative causes are to be removed; and therefore ulcers situated over the passage of any excretion cannot be closed, unless it be possible, by some artificial means, to cause the excretion to pass without touching the ulcer. 3. In all ulcers it is necessary to procure the approximation of the separated substance, and especially in case œdema, or any other bad organic condition, should have increased the distance; and, for this purpose, pressure and bandages should be employed, so carefully, however, that they shall not produce irritation. 4. At every dressing, it is necessary that ulcers should be washed and cleaned; those much irritated or inflamed, must be treated with mucilaginous water, and likewise with emollient cataplasms; the sordid and crustaceous ought to be cleansed with the relaxant solutions, composed of bitter, acrid, vegetable substances, or resinous matter, or with acids, alcalics, salts, or metallic oxydes, which are called *detersives*. Lastly, those ulcers, in which the ulcerated substance, by being much obstructed, requires dressings of a highly relaxant kind, there will be required the same solutions,

charged with relaxant ingredients, so much as to render them somewhat adustive or burning. 5. If the stratum of ulcerated flesh be increased, either under a hard form, as callus, or under a soft form, as fungus, so much that it cannot be easily made to undergo resolution, by means of relaxants or by compression, it is called *hypersarcosis*, and it is necessary to destroy it with the knife or with caustic; but to effect this safely, it is essentially necessary to discriminate correctly, whether the growth be simply *hypersarcosis*, and not a growth of the nature of true schirrus, fungus, &c. since any surgical operation in such cases might occasion a fatal result. 6. Fistulas ought to be managed, so that they do not close at their external apertures, before they are healed at the bottom, and throughout their whole extent; and, therefore, in cases where they are disposed to close up prematurely, it is necessary to keep them open with tents, so that, by pressure and bandages, the proper lotions and dressings may be applied. 7. When the healing of a fistula is not to be expected, without enlarging its orifice, or making a lateral aperture, through which the discharge may find a free passage, or without the whole ulcerated surface being first laid open; the performance of the operation must undoubtedly be committed to an able surgeon, provided it be certain, that there is not hid, within the fistula, any malignant growth, as schirrus, fungus, &c. 8. It is never proper to open ulcers that have been closed, or malignant abscesses; and in applying the

aforesaid relaxant substances outwardly, great care must be taken that they do not excite irritation or inflammation. 9. Bark, and the austere bitter substances, unskilfully conjoined with aromatics, and with other such like excitants, we should wish to see banished from the treatment of sores, as pernicious, and as tending only to exasperate, and sometimes to renew ulcers, even after they have cicatrized. 10. The best dressing is lint, either dry, or moistened with the same solution that is used for washing the sore ; although we allow that cases may occur, in which ointments, cerates, or plasters, either simple, or rendered more efficacious by the union of the above-mentioned deterative and adustive substances, may be more suitable. 11. When an ulcer has become a simple suppuration, the only dressing required, is the very simple regimen which we advised for regular suppurations. 12. We believe every thing applied over cicatrices, with a view of consolidating them, to be hurtful, it being sufficient to keep them simply protected from external violence.

Management of Ulcers which are to be kept open. Ulcers that are to be kept open, ought to be dressed so as only to avoid uncleanness, irritation, and degeneration. 2. Detersives, caustics, or the knife, are used to dissolve or destroy hyper-sarcoses, when too great, or likely to degenerate ; but if the ulcerated surface present a benign state, approaching that of health, it is not proper to touch it. 3. With the same design, bandages and pressure are to be made, so as to be simply retentive of

the dressings ; nor are expulsives to be used, unless, in case of a temporary degeneration, they may be required. 4. In the daily dressings, nothing more being required than keeping the ulcer in a good state, the best advice to be given is, for the patient to use the method he has been accustomed to, and which experience has proved to be suitable for keeping the ulcer in a benign and proper state.

CHAPTER XII.

OF ORGANIC BLEMISHES.

We term *Organic Blemishes*, all blemishes in the texture of an organ considered independently of those diseases which shall have produced them. Now, in the following general and brief notices respecting organic blemishes, we do not propose to treat of monsters, in which the living creature is brought into the world with such defects of the body, that it cannot live after birth.

With regard to their origin, organic blemishes are called *Congenital*, when they exist at birth, passing over as a thing useless to know, whether they may arise from diseases suffered by the fœtus

in utero, or have been derived from a defective conception. They are called *acquired*, if they remain as relics of diseases suffered during life, and these may exist under any form whatever, whether lesions, as wounds, derangement of tissues, ulcers, or gangrene; or simple alterations, as congestion, inflammation, obstruction, fever; or nervous disease.

With regard to the effects of organic blemishes, it is necessary to distinguish three species:—1. *Deformative* blemishes, or those which produce an unseemly appearance in the texture, but which, by not interfering with any function of life, do not injure the health. 2. *Morbiferous* blemishes, or those which necessarily from the first, or by increasing, become causes of diseases, which may be of any form whatever. 3. *Mortiferous* blemishes, or those which, either immediately, by impeding the performance of some function, or mediately, by producing some serious disease, finally cause death.

Organic blemishes of size. The races of giants and of pigmies are fabulous, but still there are frequently men prodigiously large, or extremely small in person, without any defect in their corporeal functions.

But organic blemishes of form consist, properly in largeness or smallness of particular organs, as the larynx, the heart, the stomach, the tonsils, the penis, the clitoris, or any other part. These blemishes may be connate, or may be produced by disease; and, with respect to this, it is observed, that the phlogistic process, whether inflammation, con-

gestion, or obstruction, produces enlargement, and the nervous, whether it be pain, stupor, convulsion, or torpor, produces diminution of the part affected; although it is very possible the contrary may be the case. Now, in case the morbid process be still present, as may be ascertained from the slight morbid phenomena with which the part is affected, and by which it is rendered liable to an acute renewal of the disease producing it, there is reason to hope that on the effectual destruction of the morbid process, the part may re-acquire its natural size. But, if the organic blemish should be connate, or if it should be so considerable, that it is not to be expected that it will be entirely removed by the destruction of the disease, or if it should exist as a relic of a disease already suffered and entirely resolved, it must be deemed uncontrollable. And, therefore, in cases of enlargement of parts, the blemish of which might be productive of evil, while the removal of the part would be attended with none, surgery opportunely accomplishes the removal; and, at other times, by means of artificial helps, supplies defects which arise from the size of parts being too great or too little.

The enlargement of a part, by producing pressure on the organs, distending the membranes, and narrowing the canals near it, may occasion diseases, organic disorders, and death: and in like manner the same might be produced by the diminution of a part, from the neighbouring parts wanting their due support, although it be possible, that these

blemishes may exist without producing any defect of the condition of the body, of the organ itself, or in the parts around.

Organic blemishes of number. There is no organ of the body which has not been, in some cases, wanting or multiplied. In fact, foetus are born without a brain, without a heart, without a stomach, with two heads, with two hearts, with two bodies, with extremities, &c. wanting or multiplied; but such blemishes must be considered as monstrous, since they are incompatible with the continuance of life. The very frequent want and multiplication of the ramifications of vessels, and the not unfrequent want or multiplication of the testicles, uterus, kidneys, fingers, teeth, &c. are not incompatible with the continuance of life, and are to be considered as organic blemishes.

The multiplication of organs never proceeds but from nature, but the want of them may be either from nature, from art, or from diseases. The multiplication often impedes the free use of a part; in other cases, they produce the same effect that we have above observed to arise from increased volume, from their occupying a greater space; and, in other cases, they remain without doing any harm, and sometimes even promote the due performance of the function of the organ concerned. The want or the loss of an organ, however unimportant, has always some effect on the functions of the living body, and may become a cause of chronic diseases, or death: the loss of the ex-

treimities has been observed to become a cause of plethora, as also of a diminution of the wonted vigor of the body; and the function of a duplicate organ as one of the testicles, or mammæ, &c. which has been lost or is wanting, is sometimes compensated by the increased vigor of the remaining organ, when it is in a healthy state, but, if it should be already in a weakened state, a still greater weakness or the destruction of the organ sometimes follows.

Organic blemishes of continuity. Some parts which ought to be separate may be found united, and others which should be united may be found divided at birth. Of this, a frequent example occurs in the hare-lip. Inflammations are frequent causes of adhesions, and especially among the serous membranes which line the cavities, and cover the internal organs; lesions are causes of morbid separations, and morbid adhesions are produced by the supervening inflammation.

Eversions of parts, strictures of canals, and misplacements of apertures, are also blemishes of continuity, and may in like manner, be connate, or produced by the diseases aforesaid. The defects of canals; more than those of any other species, although at times slight, are causes of severe diseases and of death.

But where the hand of the surgeon can reach, by the employment of the knife to separate, the bougie to enlarge, and the artificially exciting of inflammation and adhesion, it often happens that, with little pain or trouble, blemishes of this kind are happily got over,

Organic blemishes of form. There are often parts ill formed in new-born infants, which the midwives in ancient times being persuaded that they ought to rectify, used barbarously to disfigure, especially when situated on the face. Lesions, derangements of the tissues, ulcers, gangrene, inflammations, &c. may all change the aspect of organs, by altering their shapes, and destroying the continuity of their textures. The ricketts, beyond every other disease, produce the most unseemly deformity. The deformity alone of a part; as it often does not interfere with life, very rarely can be remedied by art.

Organic blemishes of colour. The connate stains of irregular figure, of a plain or elevated surface, of colour either white, brown, red, or black, and sometimes covered with silky hair, are called by the vulgar *golosie* (*glutton's marks*), because they foolishly believe, that they are produced by the cravings of the mother, not having been satisfied, in a longing during pregnancy, to eat something of the same colour. Again, a plain spot, round and regular, black or white, and often covered, as the *golosie*, with hair of a like colour, and reticulated, is called a mole. These spots must be ascribed either to a defect in conception, or to a disease of the skin, which has affected the foetus in the womb of the mother.

Acquired stains are the *lentigini* (freckles) of an obscure white colour, which appear principally on the cheeks of persons of fair complexions; and

the *vitiligini* (glossy stains), which are large blackish, or fair, and rarely occupy the face. But these spots often arise without at least any visible disease, and remain for many years, or for life. The *efelidi*, or reddish marks produced by the sun, by fire or caustics, and those which the common people paint on their arms, are acquired stains, and sometimes also remain as indelible blemishes. Petechiæ, Ecchymoma, Herpetic and Icteric stains, as also the variolous pits, and other marks and cicatrices are rarely obliterated after the resolution of the disease by which they are produced.

Organic blemishes of site. Examples are already known of such varied deviations, as to the situation of the organs of the body, that we have happened to see all the organs of the right side placed on the left, and the contrary. Now, it is not this alteration, but the removal of any particular organ out of its proper situation, which ought to be considered an organic blemish.

Organic blemishes of site may be connate or acquired; and, besides, may exist alone, or as causes, accompaniments, or effects of organic blemishes of size, continuity, form, or structure.

An organic blemish of site rarely exists without there being at the same time a weakness of the organ, which increases the blemish, or is produced and increased thereby. And, by considering attentively the anatomical and physiological relations of the organ, it is usually not difficult to understand, the relations that exist between the organic blemish and the disease, which conjointly affect the organ.

The falling of soft organs from their places, in obedience to the law of gravitation, whether it be because life no longer sustains them on its wings; or because their ligaments, from being lengthened; can no longer hold them fixed, is called prolapsus. When, again, a prolapsed organ has passed through some narrow opening, whether it be a natural one; or one produced by a rupture of some membrane; so as to be situated partly within and partly without the opening, it is called a *hernia*. Dislocation is the dislodgement of the end of a bone, from the situation in which it ought to be, in relation to the next bone to which it is articulated.

In order that these organic blemishes may be repaired, it is necessary that the best means in our power should be employed, especially as, from one day to another, they may endanger life. Pharmaceutical means will be required for any disease which either exists or may supervene; but it is more essential and expedient to employ surgical means; either to replace an organ, or to relieve the protrusion. By proceeding otherwise, pharmaceutic means, if employed to remove any disease affecting the parts dislodged, might prove ineffectual, or if they removed it, there still might remain the parts permanently blemished, and out of their situation.

Organic blemishes of structure. Induration, ossification, and opacity are blemishes of the structure of a part, and injure those functions, to the performance of which the pliability, softness, and transparency of the affected organ are necessary.

Opacity injures the sight, a function for which the perfect transparency of the three humors through which light is conveyed to the retina is required. Induration, however slight, injures greatly those functions for which a tremulous motion is necessary, as the hearing, the voice, &c. Induration and ossification of the cartilages, of the joints, of ligaments, tendons, &c. cause the limitations observable in the movements of aged persons. Ossification of the gums made it be believed, that, by length of years, the teeth are removed. Ossification of the valves of the heart, and of the great arterial trunks, more than any other blemish of structure, produces innumerable diseases, gangrene of the extremities, and sudden death. Finally, we observe, that blemishes of structure cannot receive any assistance from art; and, therefore, if considerable, they must produce slow inflammations, congestions, obstructions, nervous diseases, fluxes and collections inevitably fatal.

Diagnosis. Organic blemishes of external parts are known by seeing and handling them. With respect to those within the body, as they are rarely without pathognomonic phenomena, it is often possible to detect where they are situated, and of what kind they are.

The diagnosis of organic blemishes, however, still requires greater light from morbid anatomy; and, until this is obtained, physicians justly judge that a disease, whatever may be its form, must be sustained by some organic blemish, as its cause, in

every case where the disease presents a monotony not usual in the functions of the living body, and displays an undue intractability as to the efficacy of remedies.

Prognosis. No organic vice is of itself susceptible of resolution, and therefore it ought to be accounted great good fortune, when surgical expedients are available to impede their progress, and ward off their bad effects. Wherefore the omission of such means is always to be condemned, and the due regulation of the non-naturals is to be enforced, so that the patient may avoid inducing a disposition to those diseases, to which the organic blemish tends. Again, it is not difficult, by the lights of anatomy and physiology, to foretell the result of an organic blemish of which the nature is known.

Cure. Medicine, as we have said, may employ only the palliative and prophylactic cure in organic blemishes, so as to alleviate the sufferings of the patient, to supply, as far as can be done, the defective functions, and to prevent, or to soothe the diseases which they produce. And as every disease produced and sustained by an organic blemish, must manifestly be irritative, it will be understood that the method of cure ought to be always relaxant. But still, when, from any urgent symptom, it may be necessary to employ some excitant, we ought never to forget the reserves prescribed in chapters XIII and XIV of the preceding book.

CHAPTER XIII.

OF GANGRENE.

Phenomenology. *Gangrene* is the mortification of a part of any organ or member; as, *sphacelus* is of the whole of an organ or member, and an *eschar* is a stratum of dead flesh which is attached as a crust to the situation of the gangrene. Now, in order to be able to reason analytically of the pathology of gangrene, we shall distinguish its phenomena into preceding, concomitant, and subsequent.

1. *Phenomena of an approaching gangrene.*

Parts never run from a state of perfect health into gangrene otherwise than by the urgency of some other disease, which destroys the integrity and natural formation of a part: wherefore the phenomena of approaching gangrene, are those of any morbid form of extreme acuteness and severity.

The signs which indicate approaching gangrene are, 1. *In a case of congestion*, lividness, swelling, and great softness, with pain rather little in proportion to the great swelling. 2. *In a case of obstruction*, an ash colour, pain heavy, and from time to time pungent, a stoney hardness, heat rather slight. 3. *In inflammation*, a purplish

colour, a mordicant heat, transfixing pain, and a hardness like that of leather. 4. In *nervous diseases*, an earthy colour, sensations almost gone, a coldness like that of marble, and a hardness like horn. 5. In fevers, fluxes, collections, wounds, suppurations, ulcers, and organic blemishes, gangrene shews itself to be approaching by the same phenomena as the congestion, obstruction, inflammation, or nervous affections which existed in the affected part. 6. In every approaching gangrene the function of the affected organ, as well as those of organs that sympathise with it, manifest a great alteration.

Phenomena shewn by a part during the process of gangrene. When the phenomena of approaching gangrene go on always increasing till the part is seen, instead of merely suffering morbid action, to be undergoing a derangement of tissues, gangrene is known to have taken place. And, in this respect, gangrene is distinguished into *humid* and *dry*. In humid gangrene, the epidermis is often raised into little bladders full of ichor, yellow or green, and foetid; the marks of the fingers are retained after pressure; a cadaverous fætor is exhaled; the swelling, the softness, and all the phenomena of the preceding inflammation and congestion, appear more exasperated. In dry gangrene, the phenomena of dryness appear, with hardness of the part, and, in the greatest degree, those of obstruction and nervous affections mentioned above.

31 *Phænomena of Gangrene, When already complete.* Gangrene and sphæclus are said to be complete when the substance is become an eschar, that is, a purified crust without any remains of life. In fact, it gives the sensation of a heavy body attached to the living substance; it quickly acquires a black colour and a hard surface; it has no feeling nor motion; and follows the putrefactive process, as any dead portion of flesh, of which it already emits the fœtor.

32 Gangrene, already formed, is distinguished into *limited* and *unlimited*. Unlimited gangrene presents the substance around the eschar, with the phænomena of gangrene still going on; so that, by penetrating the cellular substance, tendons, bones, and medulla, it becomes sphæclus. And when, either unlimited gangrene, or sphæclus are diffused over the system, or receive from the system malign influences, there supervenes the Hippocratic countenance, cold sweats, loss of the senses, cadaverous fœtor, extreme lassitude, the nails become black, the pulse becomes slender or large, but always placid, and a sense of great affliction and death ensue.

33 Limited gangrene presents the substance around the eschar, in a process either of suppurative inflammation, entirely regular, as that which attends simple ulcerative wounds, or of ulcerative inflammation, as that proper to irritative ulcers. The purulent matter which flows from such process, softens and detaches the eschar, and hence the disease changes from the deadly condition of gangrene, into a sup-

uration, simple, or ulcerative, which, terminating naturally, or by the aid of art, is succeeded by the natural power inherent in parts to repair the loss produced by the gangrene. Wherefore, in limited gangrene, there are manifested, throughout, the same phenomena which we observed in suppuration.

Pathological etiology. Gangrene being nothing but the mortification of a part, it will be easily understood, that there is not required any particular cause, either disponent or occasional, to produce it, but that, like death, it may happen to any person, or in any part, in consequence of any, or from any, occasional cause, whether excitant, debilitant, or irritant, and most chiefly from many different causes operating concurrently, or in rapid alterations. Distinguishing the three causes now explained, we proceed to speak of the proximate cause.

It being very possible for the cessation of the motion, of the solids and fluids to be brought about equally by the increase, the diminution, or the disturbance, of the vital actions, we admit, that in the stage preceding the gangrene, the vital force may be hyperstenic, hypostenic, or irritated, and suffering either a morbid state or a morbid process. But, in the second stage, when, from the excess of the hypersthenia, hyposthenia or irritation, the part is in the act of passing into gangrene, it undergoes a mortiferous derangement of tissues in its intimate texture, so that its vessels, distended, pressed, and obstructed, become finally destroyed. Whether the mode of the life of the part may have been hy-

perstenic, hypostenic, or irritative, in the preceding stage, it must be believed, that, in the act gangrene, it is *irritative* above any other affection, as it is the greatest *lesion* that the flesh can possibly suffer in its texture. In the *third stage*, the gangrenous part, in like manner with all the body, we think ought to be found, either in the same irritations when the gangrene is unlimited, or in a state of hyperstenia, when the gangrene is limited; because, in unlimited gangrene, the substance surrounding the eschar, being in the act of passing into the state of gangrene, is in the act of becoming in like manner affected with derangement of the tissues. Lassitude arises from the general derangement of the tissues of all the body. On the contrary, in limited gangrene, by there not being manifested in the whole body, nor in the part, any other disease than that suppurative process which naturally and necessarily arises, whenever a solution of continuity occurs, and is not united by the first intention, as we have shewn in speaking of the nature of such process, we conclude, that the mode of the vital actions ought to be hyperstenic, with somewhat of a tendency to irritation, arising, when other causes are wanting, from the contact of the eschar, while it remains attached.

The proof of the above reasoning, every one may gather from those same arguments, with which we have demonstrated the nature of those states and morbid processes, which take place when the gangrene of a part occurs. Nevertheless, it will be use-

ful to pass in review the particular cases of gangrene, and to shew, analytically, the truth of the aforesaid principles. Before, however, descending to these particulars, we observe with pleasure, that long before this idea could have occurred to us, the most eloquent physician had already explained it, as he had read it in the book of nature, in thus describing the progress of gangrene. “ *Caro illi ulceri vel*
“ *nigra vel livida est, sed sicca et arida; proximaque cutis plerumpue, subnigris pustulis im-*
“ *pletur: deinde ei proxima, vel pallida, vel livida et fere eruginosa et sine sensu est. Deterior in*
“ *inflammatione est; omniaque illa simul serpunt:*
“ *ulcus, in locum pustulosum: pustulæ, in eum,*
“ *qui pallet aut livet: pallor aut livor in id, quod*
“ *inflammatum est: inflammatio in id, quod inter-*
“ *grum est, transit.*” Cels. Lib. V. cap. 26.

In the first place, let us consider gangrene already present from cold, as that which, in the first stage, is clearly hypostenic. Boerhaave, in his 427th aphorism, describes it thus: “ *At vero præsentis*
“ *haec § 6. ubi a frigore, pruritus et punctura*
“ *ingens, una cum rubore intenso, quem brevi nigritudo mortiferâ sequitur.*” Besides this, it is necessary to consult Van Swieten, who, in his comment on this aphorism, distinguishes precisely the same three stages established by us. “ *Primo a fri-*
“ *gori pallor oritur. Sequitur dien rubedo, quam*
“ *comitatur dolor punctorius molestissimus, vel*
“ *pruritus magnus; rubedo dein augetur, in pur-*
“ *pureum fere colorem vergens. Dein nigrescit*

“*pars sic affecta, et ad ossa usque* [vero] *sphæcelo corrupta, cadit.*” This simple statement of fact has no need to be further insisted on. Similar to this is the description of gangrene from relaxant poisons, such as ergoted rye, poisonous mushrooms, the poison of the viper, the violent contra-stimulants, &c. In the first stage, they assume the appearance of hyposthenia, or rather that of irritation, when the poison operates with celerity. In the second stage, very acute shooting pains and the purple colour of the part announce that a fatal derangement of the tissues is in the act of taking place. The blackness, the dryness, or the softness, in the third stage, shew that the gangrene is already complete, whether limited or not.

In the second place, let us observe the effects of fire or of caustics, called scorchings, burns, or scalds, which may be divided into three degrees. In the first degree, a simple inflammation is manifested, which appears to be a morbid irritative state produced by the derangement of the tissues, which the too violent action of the fire or the caustics has produced in the injured texture, and therefore, if either from a bad habit of the body, or new occasional causes, they do not pass into the second or third degree, they spontaneously and quickly cease. This is the reason why we commonly find the use of emollients recommended to soothe it. Further, it often terminates, notwithstanding the application of strong relaxants, as acid substances, the acids, the metallic oxydes, or spirits,

which are ill indicated, and notwithstanding the approach of the part to a slow fire. In the second degree, a morbid suppurative process arises, either from the immediate, too strong, or long continued action of the caustics or of fire, or from the passage of the injury from the first into the second degree. In such a case, the cuticle is raised into bladders full of purulent serum, and hence the suppurative process commences in a manner similar to that produced by blisters, more or less violent, and in the end ulceration takes place. Now, no one will agree, that, in this case, the relaxant method, consisting of emollients in the beginning, and the strongest relaxants in the second part of the course of such process, should be adopted. In the third degree gangrene occurs, either as the result of an injury of the first or second degree, when ill treated, of injurious predisponent occasional causes, or, as the immediate effect of the fire or the caustics; which, producing a derangement in the tissues of the substance to which they are applied, quickly convert it into an eschar. Now, in such cases of gangrene, we may observe, with the consent of all practitioners, that the use of excitants cannot be supported with impunity, there being required blood-letting and the application of emollients in the beginning, and, in the progress of the case, the most powerful relaxants, diligently applied, in order to avoid the deformity which is usually produced by the cicatrix.

Finally, let us consider gangrene as arising from causes truly irritative; and, in the first place,

as produced by the proper substances of the body being corrupted by stagnation. Such are, 1. The blood shut up in aneurisms, collected in ecchymoma, or effused into any cavity, so as to lose the influence of life; 2. The secondary fluids stagnating in their canals, and especially when they have been already altered by serious diseases, as the secretions of the intestines in dysentery, corrupted bile, and, beyond every other, the retained urine; 3. Matters absolutely morbid, as the serum of dropsy, the contents of encysted tumors, the purulent matter collected in abscesses, or effused in empyema, the ichor of malignant abscesses, the filth of ulcers, the sanies of cancers, and of every other degenerated sore, &c. 4. The fæces caked, and become as hard as stones within the intestines. Now, when things of this nature produce gangrene from having become irritant, it will be easily understood that such gangrene cannot differ in nature from that produced by caustics or by fire.

In like manner, gangrene may arise from blemishes or from injury of any part, when the mortification arises either immediately, or in consequence of the due performance of the functions being impeded. Of this kind is gangrene, arising in any part from the circulation of the fluids being impeded, by great aneurisms, great varices, ossification of the trunks of vessels, diseases of the heart, incarceration of hernia, enlargement of organs, the pressure of tumors on the trunks of vessels, the ligature of vessels, the sewing up or bandaging

of wounds too tightly, ulcers, contusions, &c. or from the transmission of the nervous influence being obstructed by the cutting, contusing, or laceration of any nerve necessary to the life of an organ, or of the spinal marrow itself. Of this kind also is the gangrene which comes on after wounds, contusions, and ulcers, from those irritative causes which serve to exasperate the irritation already existing in any injured part, as we observed in the proper place. Now gangrene of this kind certainly ought not to be considered hypersthenic or hyposthenic, but irritative, inasmuch as, from the beginning to the end, it consists in a derangement of the tissues, which procures the death of the part either immediately or by obstructing the exercise of its proper function, and therefore the only methods of cure applicable to it are the palliative and the prophylactic, by which the strength is supported as much as possible, such causes as admit of it are removed, the bad effects of such causes as are irremovable are, as far as possible, obviated, the excessive irritations are soothed by the use of emollients, and the most effectually relaxant method enforced when any more dangerous morbid process appears to be impending.

In the fourth place, let us remember that gangrene may proceed from diseases of process of great violence, and of such a nature that they at the first produce derangement of the tissues, such as the gangrene of anthrax. But it is not at all

our intention to adduce any new argument in proof of the hyperstenic and irritative nature of gangrene of that kind, for two reasons, first, because the general arguments are the same as we have already advanced, when demonstrating the incommutable nature of every morbid process of whatsoever form, and secondly, because we shall be obliged to explain the particular arguments, in treating of diseases singly.

In the fifth place, we shall notice gangrene as arising from contagious diseases, as the small-pox, petechial fevers, aphtha, the measles, &c. or from bad morbid habits of body, as herpes, lues, scrophular, hæmorrhoids, &c. which diseases may operate as disponent causes, or as occasional and exciting causes of gangrene. And we premise in this place, what we shall be obliged to demonstrate elsewhere, that gangrene, for the most part, arises from those diseases which prevail epidemically in prisons, hospitals, fleets and armies. Now, since we shall prove very easily the irritative nature of the greater number of the causes of these diseases, and the hyperstenic nature of the morbid processes produced by them, it would be superfluous to demonstrate, by way of analysis, the hyperstenic and irritative nature of this kind of gangrene. It is necessary at present to banish from practice four gross, and radical errors. 1. Are those remedies truly *antiseptics* which possess the power of preserving the living flesh from gangrene? That hypothetical system of medicine, which arroga-

ted to itself the title rational, having adopted the unreasonable maxim, that agents operate on the living body in the same manner as on the dead body, admitted those bodies to be antiseptic which keep off putrefaction from the flesh of dead animals, which was, with the humoralists, the reason why the art of healing in cases of gangrene became the same with that of curriers and tanners. But is it to be admitted, that there is no difference between preventing the death of living parts, and retarding the putrefaction of dead? In the present day, chemistry has directly destroyed this error. To take away humidity, which is the chief agent in producing the putrefaction of dead flesh, is the means of producing gangrene of the living. From all this we conclude, that those remedies only ought to be reputed antiseptics, which have been found by analysis, in a particular case, capable of producing the resolution of that disease, by which the living substance is affected, when it is undergoing the process of gangrene.

2. Must gangrene be always an hypostenia, to be curable by means of excitants? It is well known that Brown is the only one who has affirmed this, and that he was led to do so from his hypothesis, that death always proceeds from debility, and by the arguments, (pretty often confuted) which he drew from the deficiency of the function of the part, and from the extreme physiological debility in which those die, who are destroyed by gangrene. Nevertheless, from that other still more serious er-

ror of his, whereby he maintained all agents to be excitants, his disciples came to employ, among the substances for resisting gangrene, in like manner as the humoralists did before them, acids, neutral salts, and acrid vegetable substances which are relaxants, austere bitters, aromatics, and the alcoholic liquors, which are vivificants, from which every one may perceive, that they have neither added nor corrected any error in the practice previously in use, unless it be that the ancients did not scorn to subject their theories to common sense, and to make use of bland emollients, a humility of which the Brownianians cannot be accused.

3. Does it ever answer, to employ excitants to produce the hyperstenic suppurative inflammation, and thereby to set limits to the spread of gangrene? If the excitants could be effectually employed with this view, what gangrene would remain without limits? But facts altogether oppose the idea? If the substance surrounding an eschar is not prevented from suppurating, it must necessarily suppurate benignly, from that physiological cause whence it invariably happens; that suppuration arises, in whatever place there is a want of substance: wherefore it is, in fact, the suppuration which limits the gangrene, but that the gangrene, being limited, the parts around must necessarily suppurate. Now, the sole and common cause, which prevents the regular occurrence of suppuration in the substance which surrounds an eschar, consists in that disease by which the eschar has

been made, and which continues spreading and producing derangement of the tissues and gangrene. The way, therefore, at once to arrest the derangement of tissues, and to induce suppuration, is not blindly to employ excitants, but to calm irritation, and so to prevent the mortiferous inflammation or derangement of tissues, by means of bland emollients, rendered more proper for this purpose by the addition of the most efficacious relaxants.

4. Could excitants ever be required to balance the fatal action of the septic humours absorbed from parts in a state of gangrene? Such an humour, if possessed of a power to produce gangrene in the parts with which it comes into contact, and finally throughout the body, must have acquired an adustive power, capable of operating as a caustic: hence its action must always prove irritative. And what other effect do excitants produce in a mortiferous irritation, except, by making it more violent, to accelerate death? Moreover, every one is aware that such absorption of septic humours exists as yet only in the darkness of physiological hypotheses, and is not supported by any proof.

Diagnosis. Gangrene, whether internal or external, is recognized without difficulty, after the exact analysis of the phenomena and of the causes of the disease, and the termination of gangrene is soon known from the cessation of the pain, without any symptoms of resolution, but rather with an aggravation of the disease. It becomes us to employ

the greatest care, in case the morbid state preceding gangrene should be supported by debilitating causes, to determine whether the affection be hypostenic, conformably to the causes, or whether it has become irritative, from the tissues of the part being already deranged. To determine this point, we must observe the rules explained in treating of the diagnosis of congestion.

Prognosis. All internal gangrenes, which are in the act of forming, or which are already formed, end immediately in death. In the stage preceding gangrene, life may be saved, if the disease is not violent beyond the efficacy of any remedy whatever, and if the morbid causes can be either driven out of the body, neutralized, or rendered less noxious.

In external unlimited gangrene, the prognosis is to be given as in internal gangrene; except that it may be considered rather less dangerous, from our being able to employ local expedients in the management of the part. In external limited gangrene, the same prognosis is to be employed, which we stated to be applicable to injuries in general, and particularly to suppuration and ulcer.

Cure. In the stage preceding gangrene, if the cause be debilitating, it is necessary to recur to excitants, and especially to those which are best suited to counteract the bad effects of the causes. But, in doing this, the greatest possible delicacy must be used to adapt the cure to the known condition of the part, and of the patient: because, as gangrene arises more readily from rapid transitions

from heat to cold, or from cold to heat, than from heat or cold singly, so the precipitate use of excitants might prove extremely injurious. Moreover, it must be remembered, that if by evacuations, and especially, if by emetics the injurious matter can be expelled, it should be done without loss of time. Meanwhile, wine, spirits, aromatics, bark, and the other austere, bitter, and aromatic vegetable substances, are to be employed. In gangrene from cold, it is forbidden, by observers, to apply heat immediately to the part, or to administer heating remedies. On the contrary, we are directed to commence by the application of snow or very cold water to the part, and afterwards very gradually to have recourse to the general and local use of excitants. When, again, the cause is excitant, it is to be understood that the contrary method should be employed, but with the same caution; in fact we see that gangrene easily ensues from slight cold, in any case where a part or the whole of the body has been greatly heated. If, again, the cause be irritative, it is necessary in the first place to remove it, if possible, as the blood in ecchymoma, the serum in dropsy, the pus in abscesses, the filth and sanies in ulcers; or to evacuate it, as, for example, intestinal accumulations by cathartics, the urine by diuretics or by catheter, or lastly to remove it by a surgical operation before gangrene has supervened. In the meantime, it is necessary by all means to support the strength with food of the most nutritive and least stimulating kind, to sooth the irrita-

tion with the most bland emollient means, and to reserve blood-letting and the more active relaxants, in case these should arise to very severe irritations, tending to produce derangement of the tissues. We recommend all this more especially in cases where chirurgical operations are necessarily followed by irritation and inflammation; since, by proceeding otherwise, lives saved by the knife are seen to be destroyed by the pen prescribing irritants.

In the second stage of gangrene, not less than in the third, when it is not limited, whatever the cause may have been, it is necessary to make use of the same method which is proper for the irritative gangrene, from the first stage; in order that the irritative derangement of the tissues may be soothed and not augmented.

In the third stage of gangrene, the very same care must be adopted, which we stated to be proper, both in suppuration and ulcer.

Management of the part. It will easily be understood, that, considering a gangrenous part as broken, it is necessary to take the same, or still more, care of it, which we stated ought to be taken of every injury. We especially recommend external cleanliness. The knife, fire, and caustics, employed of old to detach and remove the eschar, to excite the suppurative inflammation, or to prevent the absorption of corrupt humours, we highly disapprove, and in this the most enlightened modern surgeons agree with us, saving only, that it is necessary to admit the use of the knife, when the bad

humour is collected under fasciæ, as it must be essentially required to lay them open in order that the matter may escape. To prevent amputation from being had recourse to cruelly and uselessly, as it used to be when employed with a view to put a stop to the progress of sphacelus, modern surgery has already established as a maxim, that amputation ought not to be undertaken on account of gangrene, except when the member has completely sphacelated, and the sphacelus has become limited.

CHAPTER XIV.

OF DEATH.

Phenomenology. Death is the separation of the soul from the body. At the instant of death, all the functions cease which man while living used to perform; namely, the power of sensation, vital motions, and the formation of parts. The body, deprived of the peculiar influence of life, obeys the common laws of physical affinities, is dissolved, and brought at last to a few cold ashes.

We must here, as we have done with respect

to gangrene, divide the phenomena of death into three parts, explaining in the first, those of approaching death; in the second, those of death when it has taken place; and, in the third, those which appear in the body during putrefaction after death. But, as in this matter there are many things which do not regard the scope of our work, so our description will prove much more brief than it would be, if we had more general views.

With regard to the first part, we shall not describe those phenomena termed deadly or mortal, because they shew that one is running a risk of dying, since the explanation of them, as the object of pathology, will be given in treating of general signs, and of special practice, in describing the unfortunate terminations of individual diseases. For which reason, we shall only observe, that the anguish suffered by any one who leaves the world by an early death, compared with the placidness of the death of those who die of old age, shews that in premature death, if not in natural death, dissolution is attended with symptoms of irritation in the greatest degree.

With respect to the phenomena of the act of death, let us remember, that those of the cessation of life and motion, are the least to be depended upon, there having been frequent examples of persons barbarously buried alive, because they were thought to be dead, from not having evinced sensation, motion, beating of the heart, respiration, or heat. For this reason, the suspension or deficiency of assimilation must be regarded as the only

certain sign of death. And, as the want of the assimilating power is not manifested, except by the commencement of putrefaction, the laws wisely require that this shall be the criterion to justify the declaring any body to be dead, where doubt has existed. Now, if death cannot be declared to have taken place, except upon the appearance of the signs of derangement of the vital tissues, is it not to be believed, that the sufferings of the living at the point of dissolution, must be irritative? Analytic reason always answers, yes.

In respect to what takes place in the dead body, it has been justly made, in the present day, the object of charity, to describe the process of putrefaction. We descend into the sepulchre, only because, by inspecting the dead body, we can discover with our eyes the form under which disease has ultimately destroyed life. These researches are not without utility, for occasionally after death the manner in which it was produced is not known. For which reason, in the present day, pathological anatomy is ardently cultivated, as a study more useful than any other. And we may remark that, as long as mankind too jealously guard the bodies of the dead, the time cannot arrive when they shall be delivered from medical imposture, an evil which is much too severely felt by the living.

Etiology. Natural death must be believed to happen, when, there being nothing violently to disturb life in its course, the instant at length arrives, when the vital power naturally ceases. Death,

though not natural death, it is well known, may ensue from any morbid state or process whatever, when the hyperstenia, hypostenia, or irritation, are so great that the harmonious concert of the functions of life can no longer go on. Nevertheless, we affirm, from observations, which we have made up to the present day, of the phenomena which the moribund present in the agony of death, that, even after the course of hyperstenic and hypostenic diseases, and always more especially in those of irritation, the vital power is itself finally destroyed.

THE END.

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